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Biological
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The Canadian Medical Quarterly

monthly

MAY 1919

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THIRTY-NINTH ANNUAL MEETING *of* THE ONTARIO MEDICAL ASSOCIATION TORONTO, MAY 28-29-30 1919

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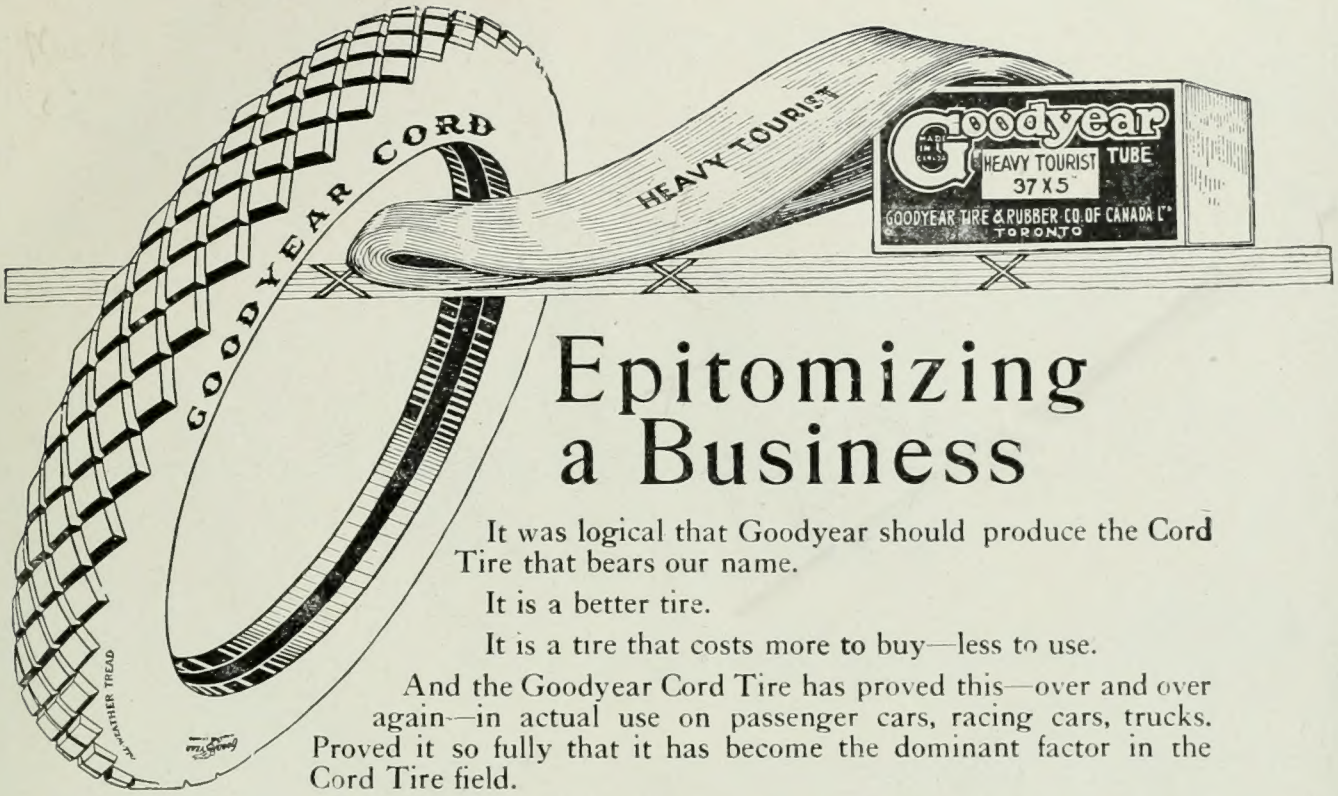

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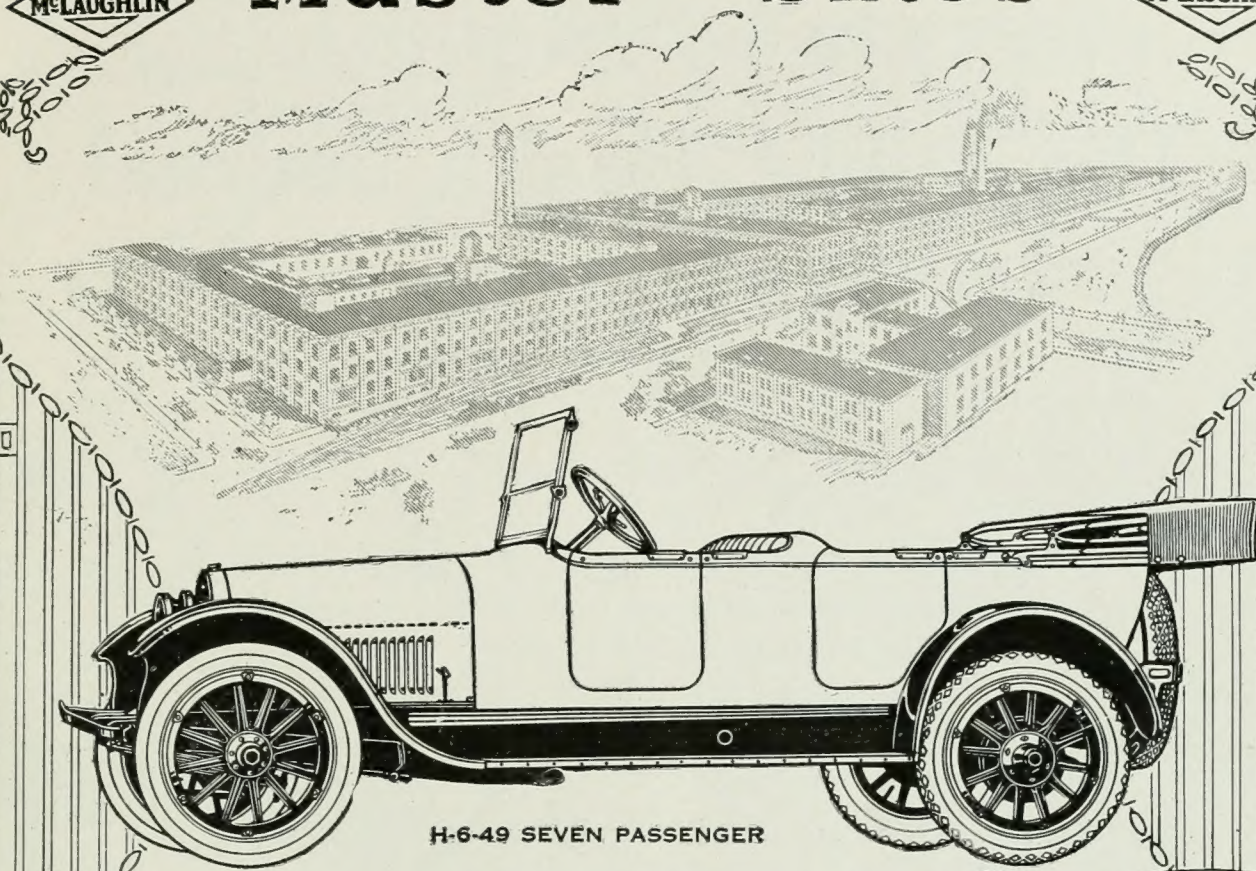

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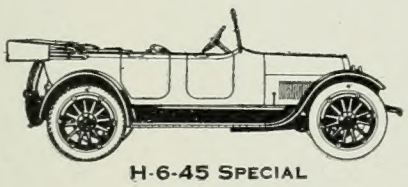

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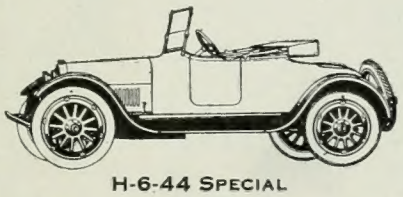

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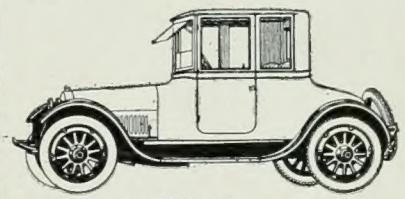

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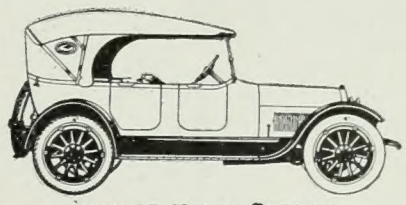

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THE CANADIAN MEDICAL QUARTERLY

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By

THE MACMILLANS IN CANADA

Unless otherwise directed all subscriptions commence with the current issue. It is impossible to furnish back numbers.

FINANCIAL STATEMENT

OF THE

CANADIAN MEDICAL WEEK

HAMILTON, MAY, 1918

STATEMENT OF COMBINED REGISTRATION STAFF

Cash received at Registration Booth		$1,005 00
Cash forwarded to Canadian Public Health Association	$ 10 00	
Cash forwarded to Canadian Association for Prevention of Tuberculosis	2 00	
Cash forwarded to Ontario Medical Association	993 00	
	$1,005 00	$1,005 00

It should be understood that we made no attempt to collect fees for the Canadian Medical Association, who had their own Treasurer and made their collections separately.

Receipts		Disbursements	
Exhibitors	$830 00	Publicity	$502 75
Advertisers in Preliminary Programme	360 00	Com. of Arrangements	2,963 52
Donation, City of Hamilton	1,000 00	Badges	211 89
" Parke Davis & Co.	100 00	Printing	798 71
" Right House	50 00	Registrars and Pages	98 50
Sale of Tickets for Dinner	2,046 00	Stenography and Secretarial Assistant	344 00
Ontario Health Officers, share of Expenses	167 08	Entertainment	244 74
Canadian Medical Association, share of Expenses	225 00	Postage, Telegraph and Telephone	180 10
Association for Prevention of T.B., share of Expenses	100 00	Exhibits	636 69
Ontario Medical Association, share of Expenses	771 19	Stationery and Office Supplies	53 65
		Miscellaneous	351 09
			$6,385 64
		Amount of Overdraft	736 37
	$5,649 27		$5,649 27

COST OF RUNNING THE ACTUAL MEETING "THE CANADIAN MEDICAL WEEK"

Final Programmes and Bulletins	$393 27	
Two Thousand Envelopes (Special)	15 75	
Round Table Tags and Notices	16 90	
Registration Booth (Clerks)	124 13	
Pages and Doorkeepers	40 00	
Reporters	26 50	
		$616 55

AMOUNT CHARGED TO ONTARIO MEDICAL ASSOCIATION AS PORTION OF EXPENSES

Preliminary Printing and Stationery	$ 74 30
Assistance to Local Secretary, 7 mos. at $30 (half time)	210 00
Badges used to identify O.M.A. and force Registration	211 89
Estimate on Postage	75 00
Share of Expenses of the Actual Meeting	200 00

AMOUNT CHARGED TO ONTARIO HEALTH OFFICERS' ASSOCIATION AS PORTION OF EXPENSES

Cost of Printing Preliminary Programme, 600 copies	$20 00	
Secretarial assistance for preparation of final Programme, 5 days at $3.00	15 00	
Printing Final Programme, 400 copies	80 00	
Mailing Preliminary Programme to Members	25 68	
Rental of Hall for Museum and Laboratory	20 00	
Registration Clerk	6 40	
		$167 08

Signed on behalf of the Committee,

JOHN P. MORTON,
President.

R. Y. PARRY,
Chairman Com. on Arrangements.

J. HEURNER MULLIN,
Local Secretary.

PRELIMINARY PROGRAMME

announcing

THE THIRTY-NINTH ANNUAL MEETING

of the

ONTARIO MEDICAL ASSOCIATION

to be held at Toronto, May 27th-28th-29th-30th, 1919

in the Mining Building, University of Toronto.

PROGRAMME OUTLINES

Tuesday, May 27th—

2.00 p.m. Meeting of the Committee on General Purposes at the King Edward Hotel.
6.30 p.m. Round Table Dinner—King Edward Hotel.
9.00 p.m. Completion of Meeting of the Committee on General Purposes, King Edward Hotel.

Wednesday, May 28th—

9.00 a.m. Registration.
10.00 a.m. Business Meeting of the Association.
12.30 p.m. Luncheon.
2.00 p.m. Symposium on Influenza to be discussed under the following divisions:
History and Epidemiology ..... Dr. F. A. Clarkson
Statistical Studies ..... Dr. F. S. Minns
Nose, Throat, and Ear Manifestations ..... Dr. J. P. Morton
Neurological Manifestations ..... Dr. Goldwin Howland
Obstetrical, Gynæcological, and Surgical Manifestations ..... Dr. A. Moir
Cardio-Vascular Manifestations ..... Dr. Wm. Goldie
Respiratory Manifestations ..... Dr. H. B. Anderson
Pathology ..... Dr. W. T. Connell
Bacteriology and Immunology ..... Dr. A. Caulfield
4.00 p.m. Entertainment—Garden Party, to which the Ladies are invited.
8.00 p.m. President's Address—Dr. G. Stewart Cameron, Peterborough, Ontario.
Address on Medicine—"Shakespeare as an Aid in the Art and Practice of Medicine";
Sir St. Clair Thompson, M.D., F.R.C.P., F.R.C.S., London, England.

Thursday, May 29th—

9.00 a.m. Sectional Meetings—Medicine,
Surgery,
Obstetrics and Gynæcology,
Eye, Ear, Nose and Throat.
12.30 p.m. Luncheon.
2.00 p.m. Address on Obstetrics—
"The Nutrition of the Fetus,"
J. Morris Slemons, Professor of Obstetrics and Gynæcology, Yale University.
3.00 p.m. Medical Problems in Relation to Rehabilitation:
Diseases of the Respiratory System ..... Dr. J. H. Elliott
Cardio-Vascular Diseases ..... Dr. C. S. McVicar
Functional Neuroses ..... Dr. George Boyer
Mental Conditions ..... Dr. C. K. Clarke
4.30 p.m. Business Meeting of the Association.
8.00 p.m. War Surgery –
General Introduction ..... Col. A. Primrose, C.B.
X-Ray Advances During the War ..... Lieut.-Col. R. E. Wilson
Surgery of the Thorax ..... Major A. L. Lockwood, D.S.O., M.C.
..... Lieut.-Col. P. K. Menzies
Surgery of the Knee ..... Lieut.-Col. J. A. Kidd
Surgery of the Humerus ..... Major Geo. Ewart Wilson
Cranioplasty ..... Lieut.-Col. C. H. Gilmour
Nerve Restoration ..... Major D. E. Robertson
Prosthetic Surgery ..... Lieut. Col. Guy Hulme

Friday, May 30th—

9.00 a.m. Sectional Meetings—Medicine,
Surgery,
Obstetrics and Gynaecology.

2.00 p.m. By invitation, the afternoon session will be held at the Dominion Orthopedic Hospital, Christie Street, Toronto, where the work in the various departments of the Hospital will be demonstrated.

MEDICAL SECTION

Dr. JOHN F. SHEAHAN, Chairman — Dr. F. C. HARRISON, Secretary

Thursday—Sectional Meeting:

Congenital Pyloric Obstructive Conditions ..... Dr. Allen Canfield
Radiographic Studies of the Upper Abdomen ..... Dr. H. M. Tovell
From Notes on Febrile Conditions met with in Macedonia during the War ..... Dr. H. C. Parsons
Auricular Flutter and its Treatment ..... Col. John Meakins (Montreal)

Friday—Sectional Meeting:

Symposium on Nephritis—

Anatomy of the Renal Tubule ..... Prof. J. Playfair McMurrich
The Modern Theories of the Kidney Function ..... Prof. J. J. MacLeod
Tests of Functional Capacity ..... Prof. Andrew Hunter
Therapy of Nephritis ..... Dr. Herman O. Mosenthal (New York)

SURGICAL SECTION

Dr. EDMUND E. KING, Chairman — Dr. T. A. ROBINSON, Secretary

Thursday and Friday—Sectional Meetings:

Surgery of Hour-Glass Contractions of the Stomach ..... Dr. W. H. Harris
X-Ray Diagnosis of Gastric and Duodenal Ulcers ..... Dr. G. E. Richards
Tumors of the Bladder ..... Dr. W. A. Cerswell

Papers not yet announced by:—
Dr. Ingersoll Olmstead
Dr. J. A. MacGreggor
Dr. E. R. Secord
Dr. Malcolm Cameron

OBSTETRICAL and GYNAECOLOGICAL SECTION

Dr. B. P. WATSON, Chairman — Dr. J. GORDON GALLIE, Secretary

Thursday and Friday—Sectional Meetings:

Indications and Contra-Indications for the Use of Obstetrical Forceps ..... Dr. A. H. Frawley
The Treatment of Puerperal Septicæmia ..... Dr. G. C. Copeland
On Backward Displacements of the Uterus ..... Dr. A. C. Hendrick
The Role of the Prenatal Clinic ..... Dr. J. Gordon Gallie
Treatment of Gonorrhœa in the Female ..... Dr. W. W. Lailey
Additional Papers not yet announced will be presented.

EYE, EAR, NOSE and THROAT SECTION

Dr. F. C. TREBILCOCK, Chairman — Dr. J. C. CALHOUN, Secretary

The Eye-Ear-Nose-Throat Section is especially fortunate in the prospects of visits from Sir St. Clair Thompson, of London, Eng., and Dr. Alfred Braun, of New York. We have not the titles of the subjects which the former will introduce at our Section Meeting, but we know that the latter will speak on "The Value of the Examination of the Internal Ear." In addition we shall have contributions from members nearer home.

The Section proposes to hold only one session, on Thursday morning; it ought to be full of interest, and afford an opportunity to meet again those members who have returned from work overseas.

Every indication points to a very interesting programme for this our Thirty-Ninth (Victory) Annual Meeting. The Programme Committee has been singularly fortunate in obtaining the co-operation of many distinguished visitors as well as members of our own Association to take part in the Meetings.

It is hoped that every member of the Association will make a special effort to be present.

Dr. F. W. MARLOW,
417 Bloor St. West, Toronto.
Chairman of
Committee on Arrangements.

Dr. G. STEWART CAMERON,
Peterborough, Ont.
President.

Dr. T. C. ROUTLEY,
66 Bond St., Toronto.
Hon. Secretary.

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The Canadian Medical Quarterly

Vol. IV, No. 4 Toronto, Canada May, 1919

EDITORIAL

THE OFFICIAL BAR-TENDER

It is very generally accepted among doctors that alcohol as a medicine, is a valuable agent in the treatment of certain diseases.

But the doctor's office is daily invaded by quite another class of applicant, who uses the physician as a means of getting that which he is unable to obtain since Parliament declared the sale of alcoholic drink illegal.

Frankly it may be conceded that the working of Government measures, of "prohibition," as indicated by the relations of the public and the doctor, are not successful, are ill-advised, and calculated to place the medical practitioner in a false position, inimical to the high standing and dignity of the profession.

One professional man is called upon to say whether a vast number of people in his neighbourhood should be allowed to buy alcoholic drinks, to say in fact, whether it is requisite now as medicine, for those who have accustomed themselves to the moderate and temperate use of it all their lives, as a beverage. Is not this to put undue strain upon each individual medical "referee"?

Moreover, is he not subject on the other hand to the so-called higher authority, the merely legal attorney? Will not his prescriptions, however justified, be canvassed and assessed by an inspectorate whose business it is to decide whether he exercises his powers too liberally?

High courts may quash the findings of police courts, but as the law stands now, a doctor never fills any of these prescriptions without the risk of question and police court proceedings. He may even be victimized by some "sleuth"—a veritable "Stiggins," eking out a wretched existence by dint of low-down police-court work, in the interests of Government prohibition.

He may be fined if he happens to be imposed upon by a plausible applicant. It is assumed that he, (the doctor) is the culprit. His professional standing is nothing since all men are equal in the eye of the law. He may win his appeal, but has lost time, money, practice, and even prestige, possibly with the best intentions, and in trying to cope with the ill-conceived, unwieldy task with which he is saddled.

Whatever remedy might obviate what is from the physician's standpoint such manifestly unfair distribution of responsibility, is for those to devise who have set

up from the inception of the "act" such moral and physical impossibilities. Even Parliaments may make things lawful, which are anything but expedient, and which from the moment they take effect, may call loudly for revision. If the difficulties of the situation are the outcome of the new rules laid down, and they are, it is the business of the legislator to find a way of administering the law which shall not depreciate professional medical men or constitute the noblest of professions a "licensing committee."

If in old time, it was not proper for men to leave the higher work to "serve tables" it is still less, nowadays, the province of skilled physicians to occupy their valuable time interviewing fuddlers, or, worse still perhaps, P.C. ——, camouflaging as a sleep-walker. What are we to think of Doctor McPhedran held up on his way to a momentous case, by an applicant for an order on —— & Co.—and this procedure, too, initiated by Government in the name of temperance and prohibition. It has been proposed that doctors voluntarily agree to abolish the medical fee, charged to applicants. This undoubtedly would act as a deterrent to some applicants, whose trust is in a bribe. Yet new patients among the uncorrupt could not consult a doctor without a fee, and the regular patients would come as usual, some with, some without. To some the abolition of the fee would appear to cheapen the medicine, though the chance of obtaining prescriptions would be materially lessened.

It is not our wish here to argue the temperance question—an issue of wide and general public interest—or to appear as obstructionists in the administration of the country's laws, but none-the-less, the fact is plainly manifest that the present system of administration of the O.T.A., as far as it affects the medical profession, is far from satisfactory and obviously in need of revision.

CANADIAN PENSIONS

Appearing elsewhere in the columns of this issue is a most enlightening address given by Colonel Belton of the Board of Pension Commissioners of Canada, before the Ottawa Medico-Chirurgical Society.

The medical profession of Canada is faced with the large responsibility of not only meting out to the returned incapacitated soldier due justice, but the additional responsibility of thoroughly understanding the pension scheme of our country, thus being in a position to effectively deal with all questions of a medical nature which may come before them. A thorough and proper understanding of the situation will enable the physician to materially assist in eliminating many grievances, thereby preventing a considerable spirit of unrest which would otherwise gain momentum throughout our land with no small amount of unpleasant and unhappy results.

There may be found throughout the profession, members who feel that they could suggest improvements to those whose duty it is to carry out the enormous task of the Pension Board. It is quite safe to assume that those in command would be only too glad at all times to receive kindly criticisms and suggestions.

Whether or not we are heartily in accord with the present basis of administration of pensions, we are forced to believe, after reading Colonel Belton's masterly address, that no servants of the people are more earnestly or honestly endeavouring to carry out a two-fold duty (to the disabled soldier and to the state) than those members of the profession who are associated with the Pensions Board.

ONE HUNDRED PER CENT. CANADIAN

The Province of Manitoba is to be congratulated upon having such a progressive Minister of Education as the Hon. Dr. R. S. Thornton, Ex-President of the Dominion Medical Council. Educational progress, coupled with patriotism, humanitarianism and one hundred per cent. Canadianism brilliantly features the Minister's address delivered to the Legislature on January 30th, 1919.

In the Province of Manitoba, where settlers are to be found from every corner of the globe, many educational problems and complications were obviously to be encountered. As detailed by Dr. Thornton, not only bilingualism but multilingualism abounded throughout the Province, with the result that many languages were being taught, all very much to the detriment of the teaching of the English language which is the fundamental requisite in establishing Canadian citizenship in the minds of people from foreign lands, who elect to make Canada their home.

Realizing that the situation was one which demanded stern, yet diplomatic and considerate attention, re-organization was commenced by repealing the bilingual clause and rolling back the machinery which had been shaping and making multilingualism.

During the past four years, changes vast in extent and far-reaching in their effects have been instituted in the school life of Manitoba.

Preparatory schools for the training of teachers in foreign tongues have passed out. The bilingual text books have been disposed of. The schools have all been brought under the care of the general inspectors. Private schools where formerly very little English was taught are being replaced by public schools. Teachers whose native tongue was other than English have been required to take the Oath of Allegiance and a special examination to show their proficiency in English.

Many unique and interesting features are to be noted in the path of progress. Teachers' residences to the number of sixty-seven have been established in close proximity to the schools, thereby greatly helping to solve the problem of getting and retaining satisfactory teachers. The school has become the community centre. Libraries have been installed which help, not only the teacher and pupils, but the adult population. First aid, domestic science, sewing, music—especially of a patriotic nature—have all found their places in the school life with results most encouraging, looking to the development and fostering of resourceful and loyal citizens.

Quoting from Dr. Thornton's report: "We are building to-day for the Canada of to-morrow, and our common school is one of the most important factors of the work." . . . . "This indicates the spirit in which we have endeavored to carry on

the administration of school matters." . . . . "There should no longer be any doubt in the mind of the observer not only that education can be carried on by the direct method of teaching English without the intervention of another tongue, but that the direct method gives far better results."

"The bonds of mutual interest and co-operation thus being established will help us to break down the barriers of separation and to give the communities of the Province generally, a link of interest in these schools. A better understanding will lead the people to realize their common citizenship, for these are Canadian children being brought up in Canadian schools, trained by Canadian teachers with Canadian ideals and viewpoints. More than ever before we are recognizing the importance of the national outlook. The term 'Canadian' means so much more to-day than it has ever done previously and the school is fostering and encouraging that spirit through the teachers."

"We have a right to demand of all who come to make their homes here that they come with the spirit and intent of becoming in due course one hundred per cent. Canadian, and it is for us to provide the facilities for all, but especially for the children, to become educated in the language and institutions of the country. Further, no one should receive the rights, benefits and privileges of Canadian citizenship unless he or she is willing to assume all the duties, burdens and responsibilities which go therewith."

The time was most opportune in the history of our country for such an address, which not only bespeaks splendid progress, but rings true with a spirit of British loyalty well worthy of emulation and propagation by all communities throughout our land. Again we congratulate the Province of Manitoba, the Minister of Education and his entire department upon their educational system which bespeaks progress, perseverance and patriotism.

STATE CONTROL OF MEDICINE

In many quarters throughout Canada the question of State Control of Medicine has been discussed and debated at considerable length. Anticipating the possibility, that one day in the not far distant future the Federal Government might give this important topic due consideration, would it not be well for the profession to devote some serious thought to the matter? By so doing, the situation which presented itself in England when Lloyd George brought down the Medical Insurance Bill, would in all probability be averted should somewhat similar legislation be enacted in Canada. Moreover, the profession should lead in matters of medical reform, rather than be led, and should be prepared to give wise counsel and advice to those whose duty it would be to bring about far-reaching changes.

The great war has set many medical men thinking along the lines of State Medicine. There is much to be said in favour of stated pay for stated work. Many of the perplexities which formerly confronted the practitioner were happily missing in the army life, with the result that the mind was more easily directed to the supreme duty of the preservation and repair of the human body. Would a similar

arrangement in civil life be feasible and does it meet with the approval of the profession? Would the citizens of our land be better served? These are questions deserving deep consideration not only from the point of view of the medical profession but from the standpoint of the general public.

DEMOBILIZATION OF THE C.A.M.C.

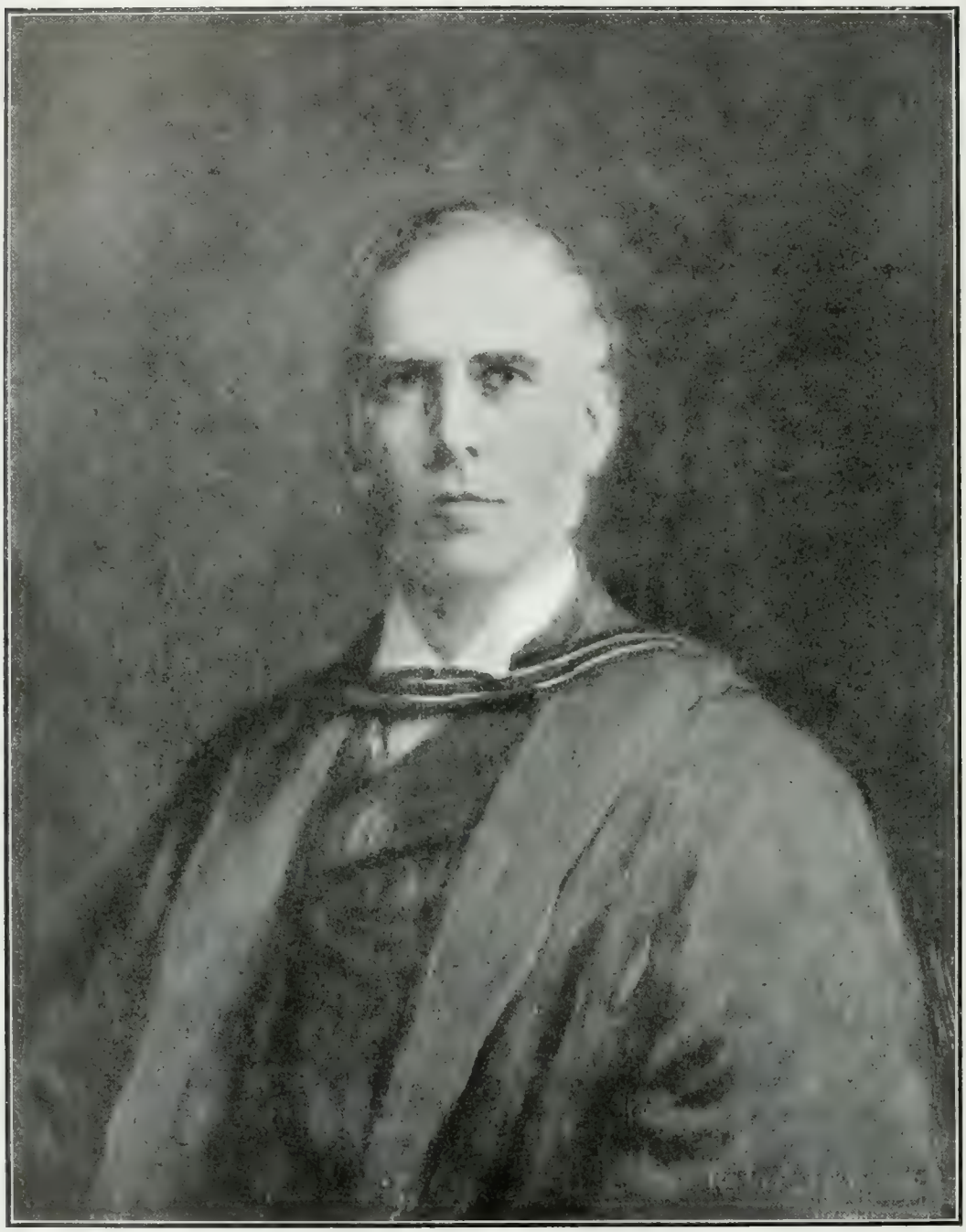
In the March issue of the Canadian Medical Association Journal, under the pen of Colonel E. J. Williams, D.S.O., C.A.M.C., the return of the Army Medical Officer to civilian life is commented upon very succinctly. There is not the smallest doubt that manifold problems will present themselves to the returning Medical Officer, and many of these difficulties require the sympathetic co-operation of not only the civilian practitioners, but the public at large.

It is rather illogical to suppose that the doctor who has been absent from his work, in many instances for a period of several years, will easily pick up the reins where he left off. The public mind does not warrant any such hope. In many instances, the returning man will soon regain his former position in the community, but there are many others who will find that during their absence a certain allegiance has been passed to remaining practitioners, which allegiance will not be easily re-allied. One can only hope that the profession will do their fair share in making the re-entrance to civilian life of the medical officer, as encouraging as is possible. It is earnestly to be desired that those who have so ably and well performed their duty to their country during the war period will have no elements of regret when their time is once again given over to civil practice.

THE GOVERNMENT AND THE RETURNED MEDICAL OFFICER

During the period of the war the call came for large numbers of medical officers and the graduating classes of medicine throughout the Dominion of Canada responded nobly and well. Many of the men who offered their services, being young and strong, were given front line positions, which were not particularly conducive to the furtherance of professional advancement for general or special practice. Some of these men have already returned to their home land and many more will follow. They have given some of the best years of their lives to the service of their country. The problem now confronting them is their return to civil life in their chosen profession.

A question which must be boldly faced is—what opportunity is to be given to these returning medical officers to equip themselves for their life's usefulness? Would it not be well for the Government of our Dominion to consider this question, and judging wisely as to the requirements, not only of the doctor, but of the citizens among whom he hopes to dwell, make is possible for the young practitioner to take post-graduate work at the expense of the country? It would be money well expended and a course which the fair-minded and far-sighted persons of our land would look upon as honourable and wise. It is to be hoped that representations, sufficiently impressive, may be made to the Government in connection with this matter.



Richard Andrews Reeve, B.A., M.D., LL.D., F.A.C.S.,
F.R.C.P. and S., Kingston.

1842-1919.

RICHARD ANDREWS REEVE

Truly a man among men, beloved and respected by all whose pleasure it was to know him, was Richard Andrews Reeve, whose life sketch it is our sad but honourable privilege to present.

Although of Yorkshire parentage, Dr. Reeve was a real Canadian, having been born at the old family home on Bloor Street, Toronto, some seventy-six years ago.

It was at Victoria College, Cobourg, Ontario, where Dr. Reeve received his preparatory education before entering University College, Toronto, from which he graduated in 1862 as Silver Medallist in Natural Sciences while yet a youth of twenty. From Toronto the late Doctor proceeded to Kingston to enter upon his medical curriculum, and in the year 1865 received the degree of M.D. from Queen's College, having up to this time had the proud distinction of claiming three Almæ Matres, and thus, as succinctly expressed by his colleague, Colonel I. H. Cameron, "His views were widened, his sympathies enlarged, his outlook opened up, his vision clarified."

After spending a year as house surgeon in the Kingston General Hospital, at the expiration of which time he was elected Fellow of the Royal College of Physicians and Surgeons of Kingston, he proceeded, in the year 1867, to Toronto, becoming assistant Surgeon of the Eye and Ear Infirmary, later becoming Ophthalmic Surgeon to the Toronto General Hospital and Professor of Ophthalmology of the Medical Faculty of the University of Toronto, which duties he discharged with great distinction until the year 1914.

Throughout the years of his arduous toil Dr. Reeve was the recipient of many honours. He was admitted M.D (*ad eundum gradum*) in the University of Toronto in 1889 and made LL.D. (*honoris causa*) in 1902 and was elected Dean of the Medical Faculty in 1896, which position he filled with unfailing grace and excellency until he resigned in 1908. In 1911 he received the honorary degree of LL.D. from both McGill College and the University of Birmingham. He was a Foundation Fellow of the American College of Surgeons, and a most signal honour was his on being chosen President of the British Medical Association at their annual meeting in Toronto in 1906, subsequently being elected to the office of Vice-President for life.

The outstanding ability of Dr. Reeve was thus recognized in many parts of the world, and one might wonder how such achievements might be attained, yet leaving ample time for the many social, religious and progressive activities which ever formed a part of his busy life. The University Senate, the Medical Council and the profession ever counselled his services and co-operation, but possibly to no section did Dr. Reeve become so endeared as to the medical students who knew him as their Dean, and whose memories will constantly be reminded of his loyal friendship and guidance. It may be that after a long and distinguished period of service, this able man desired that such a career might be terminated while yet glowing, and if this be the case, Dr. Reeve had his wish. It was a great shock to his host of friends to learn that he suddenly passed away in Toronto on January 27th, last, at midnight, while returning from an evening's engagement which was occupied in thoughts for others. Again quoting from Colonel I. H. Cameron, "A unique personality has passed from among us, and if virtue be the embodiment of 'all that may become a man,' then *Vir virtute praeditus hesterno die abiit ad plures.*"

THE VALUE OF RADIUM IN THE TREATMENT OF NEOPLASMS OF THE NOSE, THROAT AND MOUTH*

GORDON B. NEW, M.D., MAYO CLINIC, ROCHESTER.

It is now generally accepted, by those familiar with its use, that radium holds a distinctive place in the treatment of neoplasms. In no class of cases is it of greater value than in the types seen by the otolaryngologist. This is particularly encouraging because of the fact that the results following the surgical treatment of many of those neoplasms have not been satisfactory. The special value of radium in such cases is that it may be carried directly into the antrum, naso-pharynx or larynx, and thus come in direct contact with the neoplasm.

Radium has a specific or alterative action on certain tissues, such as basal cell epithelioma, sarcoma, angioma, etc., causing the tumours gradually to shrink up and disappear. Its action on other types of tissue, for example the squamous cell epithelioma, is destructive. The more rapidly growing tumours, such as lymphosarcomas, are made to disappear much more readily by the use of radium than are the slow-growing tumours, such as mixed tumours of the parotid or slow-growing fibromas of the nose.

METHODS OF APPLICATION

The radium is applied in the form of a placque or disc, over the surface of which it is spread out and held in place by a varnish; or it is applied in a glass tube inside of a silver tube about one-sixteenth by one-half of an inch in size. The disc form of application is used with little or no screening, in superficial lesions, or it is screened and applied to penetrate, as in the treatment of glands of the neck. The tubes are used with screening in applications over the tumour, or they are inserted directly into the tumour. The size of the tube usually employed contains from fifty to one hundred mg. of radium element. The radium emanation has not been used in any of our work.

In treating the nasopharynx the tube is placed on a curved lead applicator and the radium carried to the space after cocainization. In treating the larynx a tracheotomy is performed, and, after cocainizing the larynx, the radium is dropped directly into the region requiring it. In some cases, especially of multiple papillomas of the larynx in children, the radium is inserted directly into the larynx on a forceps and left in place while the patient, under anæsthesia, is suspended by the Lynch suspension apparatus. Neoplasms of the antrum are treated by making an opening directly into the antrum above the alveolar process by means of a soldering iron, and then the radium, with no screening but the silver tube and a rubber finger cot, is inserted directly into the centre of the tumour. In treating the antrum and larynx, radium is also applied with screening outside of the cheek or larynx and elevated about an inch from the skin to avoid any superficial reaction. In angiomas or lymphangiomas of the lips, cheeks and tongue the radium is inserted

*Read before the Canadian Medical Congress, Hamilton, May, 1918.

directly into the tumour by burrowing into it through the normal tissue. In lip and cheek it is inserted from the inside of the mouth, and thus any external scarring is avoided. Frequently special applicators have to be made in order to apply the radium to some particular area.

TYPES OF CASES TREATED

Radium is used in many of our cases post-operatively. In fact in all cases of malignancy of the nose, throat, and mouth in which the patients are treated surgically, they are also treated with radium following the operation. In inoperable cases the possibility of relief from treatment with radium is explained to patients, so they may thoroughly realize that nothing surgical will help, and that just what the radium will do is questionable, although months or even years of relief may be obtained, and possibly the condition may be cured.

In cases suitable for surgical treatment, radium alone is not used as we feel that if the condition is surgical, the patient should be given the benefit of both methods of treatment. Radium should never be employed in lesions such as those of the lower lip, for example, unless they have been diagnosed microscopically. The safer procedure is to excise the lesion for diagnosis, and if it is malignant, the glands of the neck draining the area should be removed in order to prevent metastasis. Many mistakes are made by removing with radium or some treatment other than excision, a lesion of the lip which is malignant, the patient later developing metastasis in the neck with the possibility of cure reduced about fifty per cent.

During the last two years at the Mayo Clinic 211 neoplasms of the nose, throat, and mouth have been treated with radium. These cases are exclusive of the cases of basal lesions of the nose, face, etc. While it is too soon to report end results in this group, I shall, in a general way, outline the results to the present time:

1. Nose (Intranasal).

Epithelioma	9
Papilloma	3
Myxoma	3
Sarcoma	1
Total	16

2. Nasopharynx.

Epithelioma	5
Myxoma	3
Fibromyxoma	1
Fibrosarcoma	1
Lymphosarcoma	3
Malignant Tumour	1
Total	14

3. Antrum.

Epithelioma	9
Sarcoma	4
Myxoma	1
Fibroma	1
Total	15

4. Pharynx and Tonsil.

Epithelioma	6
Sarcoma	4
Total	10

5. Larynx.

Epithelioma	21
Multiple Papilloma	13
Angioma	2
Amyloid	3
Lupus (Pharynx and Larynx)	2
Total	41

6. Jaws and Cheeks (intra-oral).

Epithelioma	47
Sarcoma	3
Lympangioma	2
Adamantinoma	3
Total	55

7. Palate.

Epithelioma	7

8. Tongue.

Epithelioma	13
Lymphangioma and Angioma	10
Lymphosarcoma	1
Total	24

9. Upper Lip.

Angioma	11
Basal Cell Epithelioma	8
Lymphedema	2
Total	27

10. Lower Lip.

Angioma	2

Tumours of the Nose—Angiomas of the external nose are readily taken care of by radium, and the results are far superior to those obtained with the use of hot water injection or CO^2 (carbon dioxid) snow. In the cavernous type the radium

Fig. 1.—Cavernous angioma of the upper lip before radium treatment.

Fig. 2. Same case as Figure 1 after radium treatment.

is inserted directly into the tumour. The basal cell epithelioma of the nose formerly was excised with a cautery, especially if the cartilage was involved. Later, if the condition was cured, a plastic operation was necessary to close the openings of the nose. Such growths are now cleared up with radium with the smallest amount of deformity, if any.

Intranasal and Nasopharyngeal Tumours—Sarcoma, myxoma, and fibroma are best treated with radium. The operative treatment of such tumours usually involves considerable risk, because of the liability to hæmorrhage and in most cases the tumour recurs. By the use of radium the patient is usually markedly benefited, receiving months or years of relief, if indeed the condition is not entirely cleared up. In the treatment of such tumours, other than the fibroma or fibrosarcoma, it is best to apply the radium to the cervical regions also, in order to prevent glandular involvement.

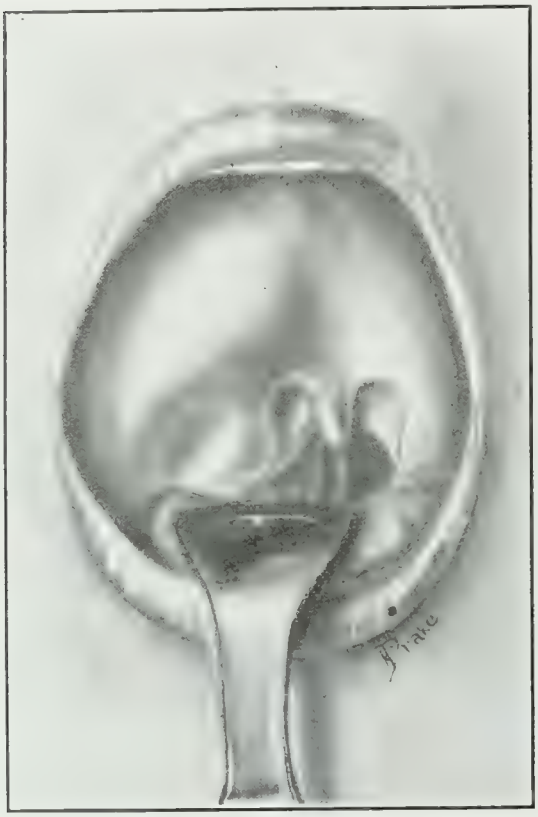


Fig. 3.—Extensive lymphosarcoma of the right nasopharynx and pharynx bulging the soft palate.

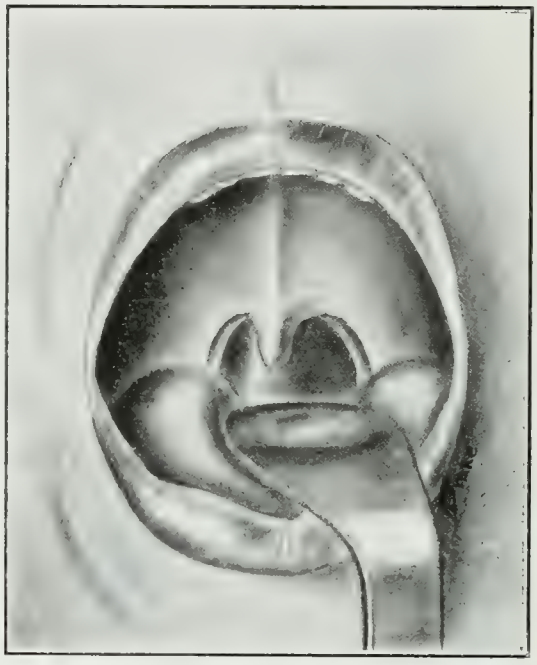


Fig. 4. Same as Figure 3, five days after the insertion of the radium.

Operative measures in the treatment of epithelioma of the nose are usually of little value. Radium frequently clears up the ulceration and discharge, and scars down the growth, giving the patient much relief, and sometimes accomplishing more than this. Myxomas of the nostril, which are not associated with a sinus infection and which always recur after removal surgically, are caused to disappear by the use of radium.

Tumours of the Antrum—In cases of malignancy of the antrum, unless of the type of fibroma or fibrosarcoma that shells out readily, the condition is treated almost exclusively by making an opening into the antrum above the alveolar process by means of a soldering iron and inserting radium. In one group of cases, especi-

ally if the cheek is involved, treatment by resection of the upper jaw is not satisfactory. The method of cooking the tumour by means of soldering irons and slow heat for from one-half to three-fourths of an hour, followed by radium in the cavity, is to be preferred and gives much better results, notably in cases of sarcoma.

Tumours of the Pharynx and Tonsil—Probably the most spectacular results are obtained in the treatment of a lymphosarcoma of the pharynx. A huge mass filling the pharynx will melt away, and in three or four days disappear without leaving a trace. In such cases, however, enlarged cervical glands frequently develop, and while these may be cleared up, the patients may die of chest metastasis, although

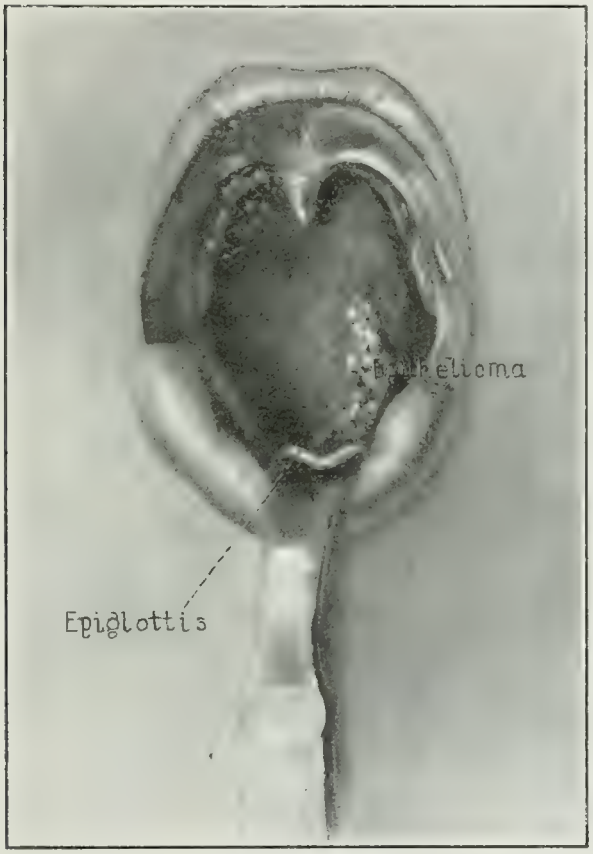


Fig. 5.—Epithelioma of the left posterior pharyngeal wall.

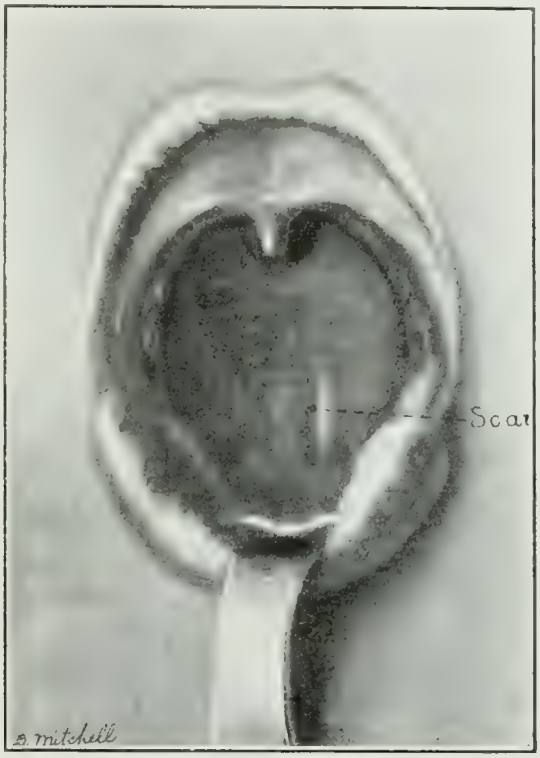


Fig. 6. Scar of epithelioma of the left posterior pharyngeal wall after treatment with radium.

they have received months or years of relief and comfort. Such conditions are hopeless surgically, and radium will accomplish a great deal.

With all the measures at our disposal, epitheliomas of the tonsil are very difficult to clear up, but we have one patient who has been free from recurrence for nearly two years following an extensive recurrence after excision and cautery. Other patients have been markedly relieved and improved, and we feel that the possibility of improvement and help warrants the use of large doses of radium, preferably after removal of the growth. If there is a good possibility of improvement in

the local growth, a block dissection should be done and this followed by radium over the neck. Lupus of the pharynx is readily cleared up with radium; this seems to be the most satisfactory way of treating it.

Tumours of the Larynx—An extensive squamous cell epithelioma of the larynx is usually considered a hopeless problem, since surgery offers very little in the way of relief. We have treated such cases by doing a tracheotomy, and after cocainization, dropping the radium directly into the larynx. The radium is held in place for from one to one and one-half hours at a time. While all patients are not benefited, very encouraging results and remarkable relief have been obtained. One man had an extensive carcinoma of the larynx obstructing the glottis so that it was necessary to do a tracheotomy; he was swallowing fluids only. In two months' time he had gained forty-eight pounds and could eat anything. He had a cork in the

Fig. 7. Extensive active epithelioma of the bridge of the nose and both inner canthi. Fixed to the bone before radium treatment.

Fig. 8. Same as Figure 7, after radium treatment.

tracheotomy tube. The growth did not recur locally, but the patient died of chest metastasis about fourteen months later. However, the treatment gave him a year of comfort. The local tumour does not always completely disappear, as in the foregoing case, but the patients who improve make one feel that everything possible should be done to give them the benefit of radium.

Lupus of the larynx is treated by dropping the radium down into it after cocainizing. The results are very good.

One case of angioma of the larynx, causing dyspnea in a child, which would have been very difficult to benefit in any other way, was entirely cleared up by the external application of radium.

The treatment of multiple papilloma of the larynx in children has been improved wonderfully by the addition of radium. The patient is suspended with the Lynch suspension apparatus, the papillomas are cleared out, and while thus suspended the radium is placed in the larynx. We have treated two cases of multiple papilloma of the larynx in children without tracheotomy, the only treatment being radium on the outside of the neck. The tumours cleared up entirely and have not recurred.

Lips—Ulcer of the lip or epithelioma of the lip should not be treated with radium. Every suspicious lesion of the lip should be excised for diagnosis, and if it is found malignant the submaxillary and submental glands should be removed. Many such lesions may readily be cleared up with radium, but it cannot be determined whether or not the lesion is malignant, without a microscopic examination. Many patients come with metastasis in the neck when an epithelioma of the lip has been removed with radium or by some other means, and no glandular dissection done.

Tumours of the Jaw and Cheek—In the treatment of malignancy of the jaw and cheek the growth, if surgical, is first thoroughly cauterized by slow heat cautery by means of a soldering iron. In about two weeks radium is applied directly into the raw area. The radium is applied again in from three to four weeks, and as often as necessary later. The addition of radium to the treatment has made our immediate results much better than they have ever been before. Twenty-one cases of cancer of the jaws and cheeks were treated during the year 1917; twenty of the number have been traced; fourteen of these have had no local recurrence. In two of the fourteen cases glands of the neck have developed, and block dissections have been done. In one case of primary squamous cell epithelioma of the cheek almost perforating, the tumour cleared up entirely, and there has been no recurrence for more than a year. This, of course, is an unusual result, but it is a stimulant to give the patient this chance of help in many inoperable cases.

Leucoplakia of the mucous membranes of the mouth is treated with radium, and the condition cleared up.

Tumours of the Tongue—Cases of lymphangioma and angioma of the tongue are very difficult to deal with surgically and, as a rule, very little is accomplished. Radium is a specific for these conditions, and very large tongues will become reduced almost to normal in a few weeks or months. Radium is either inserted directly into the tongue, or screened and applied over the tongue.

Radium is employed in epithelioma of the tongue, occasionally alone if the condition is inoperable, or if the patient's general condition will not permit operation. It is more frequently used postoperatively after excision of half the tongue and block dissection. The radium decreases the discharge, scars down the lesion and makes the patient much more comfortable.

I have not seen, in the literature, reports of the use of radium in thrush, but in our experience its repeated application has eliminated this very persistent trouble.

Results

The immediate results of the treatment of the neoplasms of the nose, throat, and mouth with radium are, as a whole, very encouraging. Many patients previously operated on with a recurrence following, are now treated with radium and the neoplasm disappears, giving months or years of relief, with no surgical mortality. The patients are made much more comfortable than they would be with an operation. The number of patients who will be permanently cured of a true malignancy with radium is probably very small relatively, but the number of inoperable cases that are markedly relieved and receive months or years of comfort is quite large. We do not, however, recommend the treatment by radium of any neoplasm that is surgical. In such cases the patient should have the benefit of both surgery and radium. The use of radium has changed entirely the prognosis in neoplasms of the nose, throat, and mouth.

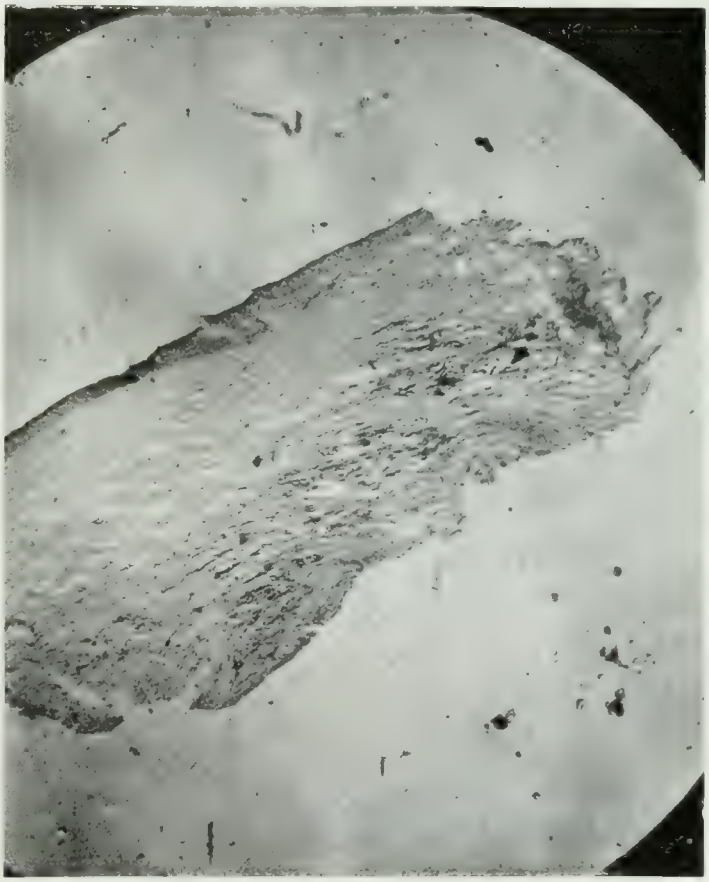
Auscultation—In auscultation of the chest, it is important to secure close and accurate apposition of the stethoscope to the skin. The object of this is to eliminate those adventitious sounds which are introduced either by a slight skating movement of the instrument on the surface of the chest, or because the whole circle of the chest piece is not making contact with the body wall. Again, it is in order to exclude extraneous sounds that the careful practitioner chooses thick-walled tubing for his instrument, and is particular to detect the first sign of any perishing of the rubber near its junction with the metal and to remedy the fault. (By their stethoscopes ye shall know them.)—Sir Thomas Horder, *Practitioner*.

A PRELIMINARY COMMUNICATION OF A RARE OCULAR CONDITION*

Presented by

Edmond Blaauw, M.D., Buffalo, N.Y., and William Arrell, M. D., Hamilton, Ont.

Miss B. R., milliner, 18 years of age, was first seen by Dr. Arrell in July, 1913, after school closed. O.S. looked "bloodshot" below the cornea. Kept extending up and was red, but in about six months was white (pat. history). Came to Dr. Arrell in Aug., 1914. Growth had then extended about 1-3 distance up. Appearance similar to present—whitish in color and well supplied with blood vessels below. Growth was excised. Began to grow again slowly. Patient shown at Buffalo Ophthalmological Club and Academy of Medicine, Toronto, about November, 1916, but none of the members of either had seen a case like it before, and no one would make a diagnosis.



In January the growth had extended a little over one-half distance up. Was excised again.

Dr. Jeffrey's report: Section shows dense fibrous tissue covered with an epithelial layer while beneath is loose fibrous tissue covered with inflammatory cells. Diagnosis: "Chronic Inflammation."

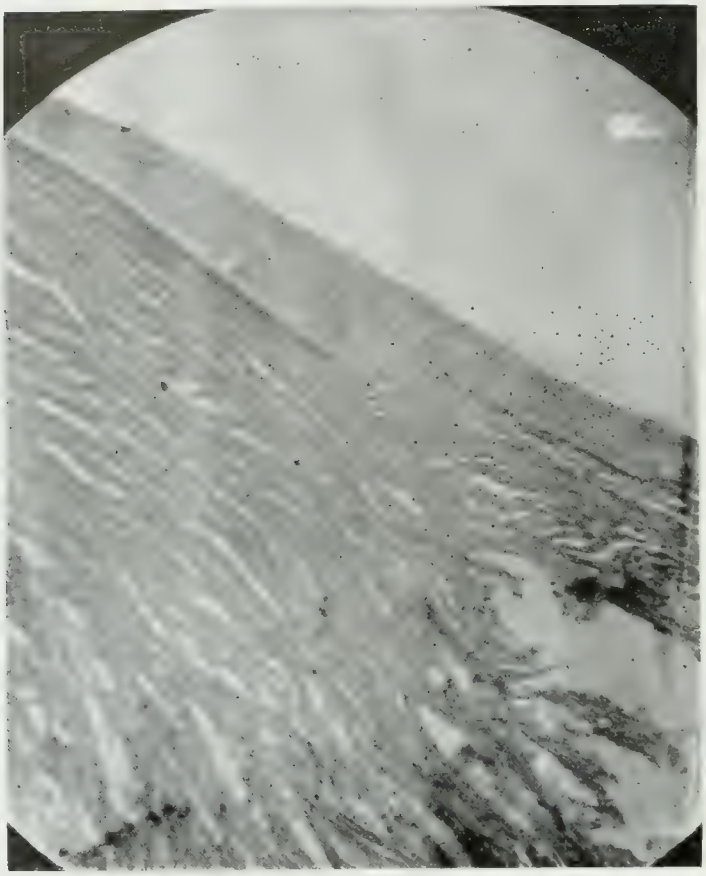
Began to grow again and in May radium was used by Dr. Aikens, first every week, and then every two weeks. In all, seventeen treatments of radium. There was no further extension after this radium treatment.

On microscopical examination of a section one receives the impression that the cement substance and the lamellæ have disintegrated, resulting in a disappearance of the former and a pathological separation of the latter. The lamellæ have

Read before the Canadian Medical Congress, Hamilton, May, 1918.

seemingly passed through the process of cloudy swelling and have subsequently split up into minute fibrillæ, whose arrangement resembles that of a network.

As one follows the course of these fibrillæ, one is impressed with the fact that they gradually become smaller, until they are only seen as fine pin-point particles, and finally disappear altogether. At the point of disappearance of the fibrillæ, fat infiltration is seen, ranging in size from the smallest droplets to comparatively large, confluent areas of fat. These areas show also greatly increased number of nuclei.



The disintegration of the lamellæ into fibrillæ is seen throughout the substantia propria; from its deepest portion up to Bowman's membrane.

Combined with the comparatively passive process described, there is a more active one. At the point where Bowman's membrane is broken up, the fibrillæ lift up the epithelium, without, however, disturbing it any more than can be explained from a pushing forward, forming as it were, an invagination in the epithelium from below. Although not abundant, fat can here also be demonstrated.

The epithelium shows few changes, with the exception of one spot where it is decidedly hypertrophic. In a few spots fat droplets can be seen. This can be retraced into the substantia propria. But even in these selected areas of the epithelium the fat deposit is very scanty.

The part of the substantia propria, which is changed into the described intricate network, is well provided with newly formed blood vessels. Capillaries can be followed up directly below the epithelium.

One microscopical description agrees very well with ours, that is, the one reported by Dr. Rudolph Tertsch from Fuch's clinic under the title "Ein Fall von primærer fettiger Degeneration beider Hornhaute" (Klin, Monats-bl.f. Aug. Juli 1911). Microscopically it differs from it.

Dr. J. G. Dwyer of New York, who saw the patient and the slides, stated that the condition was one of fibroma cornea and that the fatty degeneration was of no account.

HYDROSTATIC SEPARATION OF RETAINED PLACENTA

Gordon G. Copeland, B.A., M.B.

Assistant Obstetrical Surgeon, Toronto Western Hospital.

It not infrequently occurs that the afterbirth is retained an undue length of time in the uterus. Twenty minutes is a safe average time to wait before attempting to express the placenta, though, when the evidence of its separation and descent into the vagina is present, no harm may follow on its expulsion before this time. As a rule, massaging of the fundus immediately after the birth of the baby upsets the natural mechanism of the detachment of the placenta and encourages those very factors, hemorrhage and retention, which we seek to avoid, and the retroplacental clot which helps to separate the placenta from the uterine wall is prevented from operating normally. Meddlesome fussing at the fundus nearly always does more harm than good. After the birth of the child all that is necessary is to gently hold the fundus so that we are able to detect the presence of hemorrhage. Of course if the uterus starts to balloon or fill with blood to a serious extent, it should be actively massaged, otherwise let it alone.

However, in not a few cases, owing to a prolonged anæsthetic or hard labour, the uterus is atonic or exhausted; pituitary extract, ergot, etc., may have caused the cervix to contract instead of expulsive contractions following (personally I do not give ergot until the placenta and membranes are expelled, as I think it favors retention); meddlesome interference at the fundus, a full bladder, or the presence of fibroids may all act as factors causing the placenta to be retained beyond a normal time, even when moderately strong attempts have been made to express it.

At this stage the doctor frequently becomes annoyed and uses violence. The uterus is pushed down as if the object were to express the uterus. The result is too often a serious stretching of the uterine supports leading to future prolapse. Now, having damaged the patient, tired himself and failed to express the placenta, the doctor grows desperate, tends to forget asepis, and attempts to manually remove the placenta. This is a major operation which involves much greater risk to a woman than an interval appendectomy. If just before this stage of events happened, the doctor could be safely anæsthetized for about an hour, many a woman would have been spared much damage.

However, after a reasonable time has been spent waiting, and proper attempts made to express the placenta have failed, further efforts must be made to terminate the third stage of labour. In the city, with the patient in the hospital, or with a good assistant to watch the case, provided no serious bleeding is occurring, the patient may be safely left an hour or so longer. In the country, where the doctor must finish the case, often not to see it again for a long period, only too frequently not again unless sent for because something is wrong, there is a great temptation for him to do a manual removal of the placenta because that seems the only thing left he knows to do.

The following method, however, should be attempted first. I have found it simple to carry out, safe and generally effective, and it may, and usually does save the woman the grave risk of shock and infection which so frequently follows a manual removal of the placenta.

A sterile syringe is filled with sterile fluid such as sterile water or saline about 110 to 115 degrees Fah., and this is injected into the umbilical vein of the cord towards the placenta. Four ounces of fluid is an average quantity. This fluid drives ahead of it the blood in the cord and placenta. This causes the placenta to become turgid and rigid and larger than it was before, resulting in its tearing away from the uterine wall along the line of least resistance, the maternal-fetal line of cleavage. When a little greater force is exerted, the delicate terminal fetal blood vessels are torn through and a retroplacental hematoma is formed separating in a normal manner the fetal and maternal tissues with this exception that the blood is fetal rather than maternal. The placenta may now in the majority of cases be expressed with the usual amount of force employed normally.

In injecting the fluid up the vein of the cord one pushes until a sense of resistance is felt. The cord is then clamped. More than four ounces may be required because much of the fetal blood has been lost from the cord or because the placenta is unusually large. Where this method fails, Nature would later, or has already, failed.

In cases of real adherent placenta due to pathological changes having occurred in the endometrium, this method will do no harm and may still be effective in the slighter cases, while in the worst cases it may help make the necessary manual removal easier than it would otherwise have been.

It will be a source of great surprise and satisfaction to note how easily the afterbirth may be expressed after this simple and relatively safe manœuvre is performed. I say relatively safe, because if unsterile fluid is injected harm may result, and if an antiseptic fluid is injected and retained and the placenta still be retained, absorption might occur. This is, however, a theoretical objection, largely, and is so easily averted by simply allowing the fluid to run out by removing the clamp which has been applied after the fluid is injected to the proper tension.

Now this method will not accomplish the impossible. Often following the faulty administration of ergot or pituitary, the cervix is closed and the placenta is retained, not because it is adherent to the uterine wall, but because there is not a large enough opening to let it out. Here the rational thing to do is to give a reasonable time for the effect of the drug to wear off. In such a case the effects of ergot or the occasional unexpected effects of pituitary extract causing the cervix to be closed, may be overcome by the douching of the cervix with a hot sterile solution, as hot as may be borne, or 115 Fah. This will help the cervix to relax. It would seem that this effect is partially achieved by the hot fluid injected through the cord, and there is a thermal as well as a mechanical factor acting. If there is any doubt as to whether the cervix is closed, a rectal examination may be made and thus avoid a vaginal examination with its dangers of carrying infection into the birth canal. If the rectal or vaginal examination reveals that the cervix is closed, the hot

sterile douche should be given before the cord is injected. Slight anæsthesia may be helpful at this stage to secure relaxation of the cervix, or of an occasional hour-glass constriction.

A SIMPLE TREATMENT OF SPONTANEOUS HEMORRHAGES OF THE NEW BORN

Spontaneous hemorrhages of the new-born are fortunately relatively infrequent, but are extremely fatal unless prompt and effective measures are carried out to check them. I shall limit this article to obvious bleeding or signs of bleeding, excluding intracranial.

These hemorrhages may occur from the umbilicus, the various mucous lined openings, nose, mouth, anus, vagina, gastrointestinal tract, or into the skin. Most frequently they start on the second or third day after birth, though I have had cases starting from the umbilicus as late as four weeks. In most cases, in my experience, there has been no obvious cause. In over ten cases only one gave a definite family history of hemophilia, and in that case it was a girl baby. There is present in most of these early cases some serious deficiency in the clotting power of the blood. Very mild cases recover spontaneously, very serious cases nearly all die, and rapidly; the majority, however, are quite responsive to early efficient treatment. It is most vitally necessary to start treatment early before the child is exsanguinated. Twenty-five years ago, nearly ninety per cent. of these babies died, in spite of treatment. To-day ninety per cent. can be saved if treated early and properly.

The older treatment of giving calcium lactate, gelatine, etc., was of small value when judged by the final test of results.

A distinct advance was the subcutaneous injection of rabbit or horse serum; I assisted at some of the early work done with rabbit serum at the Sloane Hospital, and I have used and seen used with some benefit horse serum as such, diphtheria antitoxin, and coaggulose.

The modern and best treatment is the giving of fresh whole human blood in an intravenous transfusion or as whole blood injections. Good results can be obtained from fresh human blood serum, or citrated blood. While intravenous transfusion is the most rapid in its results, yet to the general practitioner, often without skilled help and special apparatus and facilities, from a practical standpoint it is not available. The blood serum method wastes valuable time.

The method brought out by Welch is the one which I have followed with good results. It is so simple that any practitioner can easily carry it out. If available and in good health at the time, the father makes the best donor, but any healthy person will do. I prefer not to use the mother's blood because the operation often upsets her, but would use it if other suitable donor were not available.

A small all-glass syringe with a sharp moderate sized needle, liquid paraffine or vaseline, 5 grains of sodium citrate, sterile saline, an antiseptic such as alcohol, tincture of iodine, and a little absorbent cotton are all that are necessary. If the

doctor has not got the all-glass syringe or the sodium citrate, an ordinary hypodermic syringe and needle may be used in an emergency to start the treatment till better equipment can be obtained; meanwhile give a Murphy drip.

The blood to be given is not citrated blood. I call the method the paraffine-citrate film method of giving whole blood subcutaneously.

The all-glass syringe is taken apart and placed in a basin of warm water with the needle and boiled for five minutes, half an ounce of liquid paraffine, albolene (or in an emergency vaseline) is boiled five minutes; the five grains of sodium citrate is boiled in an ounce of saline for five minutes. The donor's arm is bared and a suitable vein sought for. A bandage is placed around the upper arm so as to constrict the venous return. The area is painted with alcohol or Tr. I. as well as the back of the baby, who is placed face downward on a blanket. The syringe is fitted together and the hot liquid paraffine is drawn up through the needle and syringe several times and expelled; then the saline citrate is drawn up in the same manner and expelled. The needle is then injected into a suitable vein in the donor's arm, through the sterilized skin. If possible about 10c.c. is withdrawn into the syringe, and the assistant or the donor now presses a sterile compress over the needle, which is withdrawn quickly, and injected into the subcutaneous tissues of the back of the baby. It is best to pick up a fold of the skin to be pierced, at right angles to the needle which is thrust in parallel to the body of the child. The blood is then slowly expelled into the interscapular subcutaneous tissues, the needle withdrawn and the opening is sealed with a little sterile absorbent and collodion or adhesive. The band is then removed from the arm of the donor and the small puncture closed in like manner to that of the baby's. The actual time taken to transfer the syringe from donor to recipient is less than five seconds. There is no clotting. As soon as possible draw the citrate saline solution through the syringe and needle several times to clean it of blood. In a very short time the injected blood will be apparently completely absorbed, and the bleeding usually ceases promptly. If the baby has lost very little blood this may complete the cure. If the loss has been serious, these injections may be repeated several times. There is no harm in giving more at a time so long as too great tension is avoided at any one spot. Various other situations are available for these blood injections, such as the chest. flanks and abdomen of the infant, but care must be taken not to perforate a thin belly wall.

In this method a thin film of paraffin is covered by a thin film of citrate saline, and clotting is prevented from starting just as in a Kimpton tube, though, if it does start, there is nothing to prevent it continuing. Of course no attempt is made to citrate the blood so that it would stay unclotted indefinitely. Should the blood available be one which for an intravenous transfusion would be incompatible with the baby's, causing hemolysis, agglutination or anaphylaxis, the testing for which possibility takes time and special training and equipment, unless undue risk is to be chanced, yet when given subcutaneously these dangers do not arise, nor is it necessary to test for compatibility.

I do not wish to be misunderstood and thought to be condemning intravenous

transfusion, which, when conditions and facilities and skill are all available gives the most dramatic recovery, yet it is a method more or less only for specialists. With all the known tests for compatibility favourable, yet direct transfusions occasionally still give untoward results. In any case, the method I have outlined is the quickest, safest and simplest and I think not inferior to the best. It may be given as a preliminary to an intravenous.

I do think that the film of citrate solution on the film of paraffin is slightly better than the paraffin alone, though not indispensable.

It is the most practical and uncomplicated method and as such should appeal to the busy country practitioner. From the time I entered the house in one case until I had the whole operation finished was less than 20 minutes.

In ten cases three died. In all, the hemorrhages stopped at once and did not recur. In two of the three fatal cases, the hemorrhages were very serious before treatment was started. One of these was a case of a huge hemorrhage from the stomach and bowel; the family had several members hemophilic.

I have not gone into the details of sterilizing the hands or several elementary details self evident.

If no suitable donor is immediately available, by all means give practically any of the horse serum preparations you may have with you until you can get a suitable human donor.

If absolutely without apparatus, and there is bleeding from an external surface, such as the umbilicus, clean the finger of a suitable donor, or even yourself, sterilize a needle or pin, prick and allow the blood to drop on the part. This will probably check slight oozing for the time being.

PENSIONS FOR THE DISABLED SOLDIER

Canadian Expeditionary Force

Paper read by Colonel C. W. Belton, Medical Advisor to the Board of Pension Commissioners for Canada, at a Meeting of the Ottawa Medico-Chirurgical Society, March 21st, 1919.

Mr. President and Gentlemen:—

The question of pensions should be one of great interest to every Canadian citizen. The conduct and achievement of the Canadian soldier has given just cause for pride and his country's gratitude may be best expressed by wise and generous provision for his restoration to a life of usefulness and happiness. The expenditure for pensions is in itself sufficient to make the matter one of importance. This has reached approximately the sum of one million five hundred thousand dollars monthly, and the Government has placed in its estimates the sum of thirty million dollars for pension purposes for the coming year. The pension laws enacted during the next ten years, and the manner in which they are administered, will have a marked effect on the social and moral life of the people, and on the material progress of the country. Wise laws will come through a wide understanding of the problem by the people, and the medical man will be looked to for advice.

The problem is not simple and misunderstandings are many. The present regulations have been promulgated by Order-in-Council following recommendations made by the Parliamentary Committee on pensions, and adopted by Parliament. These regulations provide for a Board of Pension Commissioners to direct pension matters. This Board is purely administrative in its functions—it puts into operation the laws made by the Government for its work. It surveys the damage, decides the nature of the disability, measures its extent by scale provided and after satisfying itself that the damage was sustained in the military service of the state, attaches the award indicated therefore by regulations and issues the cheque in payment.

Pensions are not awarded for the sacrifices made by volunteers, or imposed upon drafted men, in giving up the employments of civil life; for the dislocated plans, or the social and financial losses that these involve. Pensions are not awarded for patriotic service; for discomforts and wearinesses; for perils endured; nor even for the sufferings caused by wounds and disease. These sacrifices are matters of grave importance. In the nature of things they vary widely. To estimate the economic loss attendant on them alone to the individual soldier and his dependants would be a tremendous task. To arrive at an equitable compensation is impossible, and could the sum be computed its payment would be beyond the resources of the state.

Pensions are awarded to the dependants of those who do not return, and to those who return damaged in the service of the state.

It is desired to confine ourselves to the consideration of the problem of the damaged soldier, at present.

Preliminary to the discussion of compensation two provisions of relatively greater importance must always be mentioned. All that curative art can do to restore health and the functions of the damaged parts should be done, and every appliance and artificial aid that may contribute to these ends should be supplied. And, whenever by reason of the damage sustained, the disabled man is unfitted for his previous calling, training in an occupation best suited to his remaining capabilities should be provided.

That this provision is nearly allied to compensation is evident. In some countries lump sums are awarded in lieu of periodical payments. In others, grants of land are made. These provide the means by which a livelihood may be obtained. The new vocation supplied by the state does the same; but this in the Canadian system does not supplant the pension, it merely supplements it, and the regulations are insistent that the earnings of the pensioner shall in no case reduce the pension by a penny.

Pensions are awarded for disabilities due to injuries received, or disease contracted, or aggravated, while on active service. Note the expression "while on." This has added significance by reason of the fact that it takes the place of the word "by" of an earlier regulation. In effect it means that any disability due to disease or injury occurring to the soldier from the moment of his enlistment to the instant of his discharge, is pensionable. Opinions differ as to the justice of the all-inclusiveness of "while on." Should the soldier be pensionable for injuries received in playing foot-ball or boxing sports encouraged to maintain and improve his physique, and to provide the recreation essential to his welfare? Should he be refused pension for injury incurred while returning from leave a journey imposed by the fact of service? A narrow interpretation of the phrase "by service" would not be tolerated by public opinion. The more liberal interpretation, by simple progression, widens out until its meaning differs but little from "while on." The view prevailed that service so altered the soldier's daily life and movement that any incident, save that consequent on his own negligence, was to some extent a resultant, and that the state could not avoid a measure of responsibility. In practice this view simplifies administration greatly.

The regulations provide that pensions shall be awarded "in direct proportion to partial or total disability." If that is to be done it is plain that there must be no doubt as to the meaning of "disability" and none as to what is implied or intended by "proportion."

The necessity and importance of an accurate definition of "disability" was early in pension administration recognized. Misapprehension as to its meaning loose thinking as to its nature, perhaps one might better say,—has been the most fruitful cause of misunderstanding.

In two all important aspects it is essential that its nature be made plain.

If its proportions are to be discovered it must be measured, weighed and appraised, and to do this it must be made definite and definable; and as the awarding body depends upon the description given by the Medical Boards that examine the disabled man these must understand clearly its nature.

A gunshot wound, a fracture, a disease is not a disability. These may be productive of disabilities.

There is a scale of disabilities (so called) in use by one of the nations which includes chronic bronchitis and estimates it as a sixty per cent. disability (?) Now based on attendant discomfort, or interference with the amenities of life, or decreased earning power, chronic bronchitis may be an almost negligible matter or affect profoundly its victim. In our system it is not a disability at all. It has no "proportion" by any scale of measurement.

A disability is predicated by an ability. An ability is a normal physical or mental activity. It implies the will to do and the power to do. The loss or lessening of the power to will and to do any normal mental or physical act is a disability. Disabilities may be actual inabilities or they may be imposed inabilities—prohibitions.

The whole range of inabilities may be found under four groups:—

1. General muscular weakness (debility);
2. Loss of an organ or member, or of some or all of its functions in whole or in part;
3. The loss of, or lessened acuity of, the special senses or general sensation;
4. The loss or limitation of the action of muscles or of movement in joints.

Prohibitions are the limitations of activity imposed by medical opinion or advice. Usually these are due to the necessity for rest for therapeutic reasons.

The prohibition may affect a part of the body only or the whole, and it may impose complete or partial rest.

Shorter hours of work or the lighter employments may fulfil the necessity for rest. Prohibitions may take the form of necessity for avoidance of exposure to weather or temperature changes, to dust or gas-laden air, to certain places of residence or to stresses, physical or mental.

To complete the definition of disability as used for our pension purposes, consideration of the means used to measure the disability, to get its "proportions," is necessary.

In approaching the study of a basis for the estimation of the damage done to the disabled man it was natural that we should attempt to examine the principles in use in countries with wide experience in awarding pensions.

The result of enquiry was disappointing. While much had been written about pensions in a general way there was nothing of value in regard to the practice of the art of making awards.

Most countries had schedules, more or less extensive, of specific diseases or anatomical losses, with the percentage estimate attached. It was understood that these estimates were determined in some measure by the Court awards made in suits for damages. Conditions not mentioned, it was presumed, might be assessed by com-

parison with the items on the schedule. As far as could be learned there was no basic principle from which might be deduced, in manner more or less logical, an award for any given damage. Yet it was fairly apparent that the effect of the damage on earning power was in some way concerned with the assessment.

Our own former regulations, operative when the war began, were more explicit. The expressions "in a small degree incapable," "materially incapable," and "totally incapable of earning a livelihood" are used in reference to the various awards.

Although the present regulations make no reference to earning power there is no reason to believe that this has been set aside. In fact certain clauses may be taken to confirm it. These clauses are important in other respects as well and should be carefully considered.

Clause 7 reads—"All pensions shall be determined by the disability of the applicant without reference to his occupation prior to enlistment."

Clause 9 reads—"No deduction shall be made from the amount awarded to any pensioner owing to his having undertaken work or perfected himself in some form of industry."

As occupations are followed and work is undertaken as a means to a livelihood, it is evident that these clauses would be purposeless did not the idea of earnings obtain.

You may ask is there then no consideration of the social loss or the deprivation of the amenities of life?

I do not know.

What compensation can be given to him who has lost the sense of melody or of the voices of his friends, or to him who can no longer see the forms and faces about him or the hills and waterfalls of the Gatineau? These are the real losses, but they are imponderables, beyond appraisal.

So whether the æsthetic loss may be considered in the amount of award or not, measurement by the economic loss is the only practicable method.

There are three suggested bases for the measurement of the economic loss to the individual by reason of damage sustained.

1. His former occupation.
2. All occupations of a gainful nature.
3. Unskilled employment.

The choice would be greatly simplified could one postulate be granted:—For like damage like award.

Many who have not examined the problem will not accept this and argue the standpoint of previous employment as the only just one. We need not discuss this at length—examine it for yourself.

In relation to the basis of former occupation consider:—Would you be content to receive a less award than your fellow because of an identical damage received at the same time and in the same way? Should the lawyer who suffers no decrease in earning power by the loss of his left hand be refused pension? And how will you appraise the damage done to the student who has not been trained in, perhaps has not yet chosen, a vocation?

Concerning the second suggested basis of all possible vocations, would you award a lesser pension to a labourer who had lost a hand, on the ground that he was not unfitted thereby to practice law?

The basis selected is the unskilled labour market. Numerically the unskilled labourer as a class exceeds all others in the C.E.F. By reason of his comparative illiteracy he suffers most in earning power by physical detriment—he cannot call upon his mental equipment or special training to make up for physical deficiency. His need is greatest—this scale will secure for him the maximum awards. Further, unskilled labour is the one vocation within the competency of all normal men it is the common denominator.

In some form or other it calls into play every normal human activity, therefore it can be used to measure every kind of physiological detriment. Note then that all its manifold forms are taken into consideration. Farming, manufacturing, all industries, all trades have numbers of men doing work that does not call for special skill or training. Some of the jobs call for the completest equipment of physical fitness, strength and activity, some for little strength and less agility, and between these lie many successive grades.

If by reason of damage sustained the claimant is unfitted to follow any one of these he has a disability.

Now the definition of disability in the pensionable sense may be completed.

A disability is the loss or lessening of the power to will and to do any mental or physical act required in earning a livelihood in the unskilled labour market. Or it may be stated thus:—If the power to will and to do any mental or physical act is so affected as to restrict the choice of unskilled occupations there is a disability.

Locomotion is an ability—difficulty in walking is a disability. Prehension is an ability—loss or lessening of the power to grasp is a disability. Seeing is an ability—loss of, or lessened acuity of vision is a disability. Attention and concentration of mind so that impressions may be received and retained is an ability—the corresponding disability is usually described as loss of memory, which means inattention and weakened concentration. Easy breathing under a reasonable work or exercise is an ability—dyspnœa is a disability.

Now difficulty in walking may be due to the loss of a foot or a leg, ankylosis of, or limitation of movement of the hip, knee or ankle joints, flat feet, or corns. Difficulty in grasping may be due to loss of fingers, limitation in their joint movements, paralysis of the musculo-spiral or ulnar nerves. Dyspnœa may be due to bronchitis, to occlusion of the nostrils, to asthma or to a defective heart. These latter are the disabling conditions their variety, combinations, and causes are beyond computation. The resultant disabilities are comparatively few. If the disabling condition is well described the resultant disability is not difficult to discover, and discovered, the effect upon various forms of ordinary labour is a problem involving no great difficulty to the expert trained in pension work.

It is a conviction held by the Medical Staff of the Board of Pension Commissioners that every disability and every disabling condition can be described if it is recognized. Yet many Medical Boards in the earlier days failed to show either of

these, and yet recommended an award of pension. Gunshot wound of the thigh or bronchitis would not do, would it? And many Boards having described a disabling condition with a consequent disability easily recognized by the pensions staff, were unaware of it and considered no pension indicated. Many awards were made under those conditions, contrary to the impression, sometimes expressed, that the work of the Board of Pension Commissioners is to avoid payment of pension whenever this was possible.

Consistency in awards is the star to which we hitch our wagon. Consistency horizontally and perpendicularly—that is similar awards for similar disabilities and accurately relative awards for disabilities greater or less as measured by the method just described. Based on this system the uniformity obtained has been remarkable. A difference of more than five per cent. in the individual assessments of a sub-division of our staff of medical advisors, trained in the work, would argue a case of unusual difficulty, generally one of multiple disabling conditions united to produce one disability or perhaps productive of two or more distinct disabilities.

The estimates submitted by the civilian medical attendants of pensioners have varied for a definite condition from ten per cent. all the way to seventy per cent. This wide divergence is not surprising when it is considered that the disabilities may have been measured by widely varying standards. The loss of a couple of fingers would greatly affect the earnings of an artisan whose work required marked deftness in manipulation. Such a loss to one of some other trade might have an effect almost negligible.

A further service required of the Medical Staff is the discovery of errors in diagnosis or in judgment in regard to treatment.

Recognition of indications for treatment or for special appliances frequently results in the removal or substantial reduction in the disability.

All classes of cases have supplied examples of this, but the aid of the orthopedist and the neurologist has most often been requisitioned.

The psychogenetic affections have given us the most brilliant examples of the results of skilled reading between the lines of medical reports.

Many thousands of dollars have been saved by reference of these cases for examination by experts and treatment if indicated. However, it is not the saving in money that counts; the restoration of the sufferer to health and usefulness to his family and the state is the real gain.

It is impossible to discuss to-night all the points of medical interest in pensions work. The question of pre-enlistment disabilities and their aggravation on service; of disabilities due to negligence; of penalties for refusal of treatment; of disabilities arising after discharge from service, are all of much importance, but their presentation must be deferred.

Recently in response to a demand from the soldier through Parliament a scheme of decentralization has been put into operation. In this the medical examiner who makes the examination and report upon the pensioner's condition also makes the recommendation of award.

Such a scheme would have been impracticable earlier. From the beginning of

pensions work there has been great difficulty in obtaining a sufficient number of medical men for the rapidly increasing volume of work to be handled. The supply is none too great yet, but a sufficient body of trained men has been secured to man the District offices of the Commission at the various demobilization centres throughout the country.

This scheme presents some difficulties and naturally the maintenance of the much prized consistency will be the chief. But, if the system will give satisfaction to the soldier, that alone should be sufficient argument for its establishment. It has one feature which is of paramount advantage and that is that it gives opportunity for a personal explanation to the pensioner of the nature of his disability and the method used in determining his award. The great majority of disabled men are found to be very reasonable—their complaints have been for the most part due to a misunderstanding of the basis of awards, and given a tactful explanation, their dissatisfaction will be removed.

Just as careful and accurate a description of the disability and disabling conditions will be insisted on and the documents at the Head Office will always be available to prove the correctness and justice of the awards, and the Commissioners will be enabled to exercise control of policy and practice. This is, of course, essential for the protection of the District Medical Examiners whose responsibilities will be greatly increased.

In the last analysis the success of the methods adopted for the restoration of the damaged man will be measured by the degree of comfort he enjoys.

If in the large majority of cases the pensioner will be enabled to secure a home for his family, an education for his children better than would have been his lot had he remained in civil life at his previous occupation, the work of the Board of Pension Commissioners will be fully justified.

The scheme evolved is, to my mind, quite ample to procure this result, and if those to whom its application is entrusted continue on with the zeal and wisdom already displayed it will assuredly be obtained.

Not all our problems have been solved and time does not admit of presenting them now and asking your advice upon them.

Not all our plans have been worked out, for the system has been evolved under pressure of the necessity of keeping up the daily output of awards.

But it is believed that experience and material is being accumulated that will furnish a useful contribution to the study of the effect of physiological detriment and the problem of compensation—a problem, that if signs are read aright, will have increasing importance in the near future.

HOW MAY WE BECOME MORE PROGRESSIVE PRACTITIONERS?

William Macdonald, B.A., M.D.
Owen Sound, Ontario.

When a physician receives his license to practise, too often he seems to be cast adrift. The bonds uniting him to his alma mater are then usually only sentimental, and even if he takes a post-graduate course, he must needs soon settle down to practise and too often loses contact with medical progress.

Therefore, it is the part of wisdom for us occasionally to examine carefully and in a judicial spirit all the things that make for success and for failure in our work.

We are painfully conscious of our responsibilities and of our frequent inability in treatment. It is usually admitted that the wealthy and the indigent in our large cities are favoured with more complete diagnoses and more adequate treatment than the rest of the people.

We have the most glorious vocation in the world. None other gives such opportunities for the pursuit of the things most worth while—the beautiful, the good and the true.

We have no mental shackles imposed upon us in our medical progress. How we should appreciate this mental freedom.

We should take a comprehensive view of all the fundamentals of our profession. Inspired by a genuine philosophy, let us re-dedicate the best we have, spiritual, mental and physical to that service which is so all-embracing, that our courage often fails—yet we must "carry on."

We are ever in the presence of such inscrutable forces that we require a rare combination of humility, of courage, of sympathy and of intellectual endowments in order to intervene beneficially amid the mysterious movements of Nature.

Undoubtedly, the greatest thing in the universe is "Life," and it is a wonderful thought that of all the countless living cells in the world, perhaps a hundred-million-million in the body of one man, not one of them has ever had an ancestor that died, though we go back a million years. This is verging on "eternal life" in the physical world and may portend in the spiritual world, our fondest hope. Let us have the high ambition to attain and also maintain, the mastership of our profession. Let us learn the laws of "Life" and wisely apply them to the upbuilding of a strong and healthy nation, and being well equipped for our work, let us assure the public of our integrity.

From the Legislature we ask no favors for ourselves, but an enlightened judgment on the pressing medical requirements. The proposed Medical Legislation,

admirable in its intention, seems to fall far short of the needs of the Profession and of the Public. Why should these needs be so inarticulate? The most up-to-date diagnosis and treatment should be immediately available to every sick person in the country, and a good Medical Commission should be better prepared to suggest suitable legislation than any other. Or this might be a suitable question for the Commission on Conservation to take into its consideration. These fundamental medical questions are now being considered in England and no doubt a great deal could be learned from that source that would help us.

Perhaps it is because we are not organized to take advantage quickly of new ideas, that the various cults succeed as they do and are able to command a measure of popular support. "*Laissez-faire*" individualism uncontrolled will surely give rise to unscrupulous competition and will fail to produce those constructive results which we desire.

We must find in Democracy a spirit of co-operation that will solve all our difficulties and develop efficiency in every department. Now, what does this involve as far as the practice of medicine is concerned? How efficient have we been in the past? How much better do we promise for the future? Would it not be well to call in efficiency experts? Even with medical knowledge as it is to-day, how would they rank us? One hundred per cent., seventy-five, fifty, twenty-five per cent. efficient? I am afraid the general average would be nearer the last than the first.

And this condition would be made worse by admitting to recognition the various cults that are clamouring for professional standing to which they have no just claim. But something constructive could be achieved by employing modern methods and studying the underlying principles in national mobilization for war. Is it any less important to mobilize all the efforts of a nation to resist the attacks of the great enemy "Death" and his myriad forces called diseases? And this is imperative in times of peace as well as in years of war. Perhaps this would involve a different principle for the remuneration of the officers who lead the assaults on "Disease." And even if it should eliminate some who may practise medicine for the financial rewards alone, the general subdivision of labour would encourage those who are actuated by more noble motives and allow that "group diagnosis" that is so desirable in the more difficult cases.

The organization we have at the present time has gradually grown up like so many British Institutions and is not the logical result of the single, far-sighted and controlling idea of medical efficiency and the welfare of the people.

We have the medical colleges for those in the early stages of medical education. These seem to have appropriated to themselves without protest the title of medical student, the more shame to us who are graduates but no longer students. Secondly, the Medical Council, with a contracted sphere of labour. Thirdly, the Provincial Board of Health, which is actuated by the meritorious spirit of modern efficiency. We appreciate its initiative in so many helpful projects. Fourthly, the various medical conventions which seem to have had thrown on their shoulders, the

post-graduate education of most of our physicians, though in reality the great burden of progressive efficiency is left to be borne by the individual practitioner, and this too, in the face of multiplied and depressing difficulties and discouragements.

Now in place of these various heterogeneous, nondescript organizations we would propose an ideal medical hierarchy, properly officered, to meet all reasonable demands. If we turn to the Legal profession we see how they are organized in the judicial portion of their work, and financial reward is not the incentive that controls their aspirations here. Or better, consider the organization of the Toronto or New York Boards of Health. Our present system, or lack of system, is fundamentally wrong and pernicious, and unfair in that we are required to "serve two masters," two controlling motives, that may be at variance—private gain and public good. It is surely the part of wisdom for us to reconcile as far as possible this divergence and solve the problem ourselves rather than have it solved for us.

Reconstruction is in the air and socialistic forces are gaining tremendous influence. Scientific Medicine has such wonderful stores of life-giving knowledge and promises such great advancement in the near future, that the country should be careful that only the worthy and properly equipped should be recognized and licensed as qualified practitioners, and should see to it that they keep pace with the continuous progress of Science and its applications in the practice of medicine and surgery. We do not fear that combination or co-operation would eliminate individual effort to excel. There would still remain those rewards which altruism has always esteemed the highest, and the work of Army Medical Officers the world over proves that individual initiative is not palsied by systematic co-operation.

Whatever our system, we should see to it that the best medical books and periodicals are more widely distributed and that greater interest is taken in reading. In each district we might lay the foundation of a Medical library. Arrangements could be made with the Public Library Boards for its accommodation and control, and even if we had to depend largely on contributions, these might be considerable under certain circumstances.

Occasionally we read a book or an article that gives us such satisfaction that we would like to have all our confreres enjoy it too. Would it not be possible to classify medical books for the general practitioner as an aid to his buying only the very best? We have often imagined what benefit it would be to us all if there could be edited each year a digest of all that was best in the free world's literature and have it distributed to every medical practitioner. If the Governments could be induced to do this, how much more worth while it would be than are many of our present government publications. There is a fascination about medical reading and study which grows on what it feeds on, and no influence should be unused to keep us intent students all our lives. And it is of equal importance to have some system of indexing the important things we read so that when the time comes to use them, we can readily refresh our memories. And there are many things in our mental equipment that are wrong, and should be discarded.

The mind requires hard discipline to be always ready with the right solution to every question. But it is an ideal to be striven for, and I believe there is a solution if we so will it. Perhaps every practitioner's license should depend upon four weeks post graduate work each year in approved centres. If this is not possible, then find a way by extra-mural lectures and clinics of bringing University inspiration to us in the outlying districts.

Again, great improvements in the number and distribution of our hospitals would conduce to medical efficiency. They should be on a broad financial basis in order that complete equipment would be available. You know what we need. Will Government funds ever be apportioned according to the real needs of the public services? I believe the hospitals should form the vital centre for each of our local medical societies. It does not take imagination to realize of what surpassing value it could be made. If a diagnostitian and pathologist of outstanding ability could be secured as supervisor of each district, how great would be the help. Hospitals should greatly encourage the general adoption of the rule of having autopsies on at least our more difficult cases, especially where the diagnosis may have been not quite clear or definite.

We would emphasize the importance of the autopsy. If the public understood what an advantage it would ultimately be to them and theirs, they would insist upon it and would soon overcome that somewhat natural antipathy in having such an examination made. And how much it would add to the diagnostic acumen of us all.

Hospital records should be more complete and more available. There is often too great a tendency for our work in the local Medical Society to be perfunctory. If it were possible to imbue us all with the idea that we are teachers, and that a teacher requires to know many times more than he seeks to impart, we would have a good beginning made. All our reading should be done with the idea of imparting it as well as remembering and using it. Such intensive reading during a lifetime to be followed by frequent work in the Medical Society, should increase our efficiency. Our work in the Medical Society should also be practical and demonstrate the more unusual proceedings, e.g., blood transfusion, lumbar puncture with use of the mercury manometer, intravenous medication, electric cautery, etc.

There are great opportunities in Preventive Medicine, especially as regards neuroses, focal infections and drug addiction, and the public requires a great deal of education along many lines. How much valuable time is often lost in sending for a physician and how often he does not make a prompt and definite diagnosis? How important it is to do this in many cases, e.g., appendicitis, perforation, head injuries, strangulated hernia, osteo-myelitis, and even in acute inflammations of the heart.

The question of the Social Evil requires to be handled with judgment and tact. One might almost conclude that the foundations of society should be relaid. Life is ever becoming more artificial. False views of life, fashion, late marriages are responsible for many of our problems. And although the question of the distribution of wealth is one in Political Economy, it has also a very im-

portant bearing upon the causation of many diseases. Another social question that requires consideration is that of drug addiction. If nearly ten per cent. of the inhabitants of New York City are drug addicts, let us guard our people from such a fate and use every means to prevent and to relieve such a curse. Most of the methods of treatment now in use seem to be inadequate when the habit is once formed.

The number of lame people in the streets suggests that perhaps the treatment of fractures could be greatly improved. The latest and best methods of fracture treatment may not be in general use in our hospitals, and our unorganized profession may be losing opportunities of doing the best work.

Our Canadian magazines are very select in their contents, but are tantalizing, small and infrequent in publication. If they could only get together and publish one good Weekly, what an opportunity the editorial staff would have of reaching the whole profession. The physician should restrict himself to professional interests, and not be seduced by speculation, politics, etc.

Now in closing, while I lament the many failures of our present system or lack of system, I would like to bear testimony to the many soldierly qualities of our profession.

Oh the pity of it that we should have our Gethsemanes so frequently.

We, only, know the loneliness and bitterness of such experiences.

You have heard of the fidelity and blood-brotherhood of the Indian whose life has been saved by some opportune friend. So let our Fraternity develop into a "blood-brotherhood."

What a sad commentary it is on our reciprocal relations, that the public should view our confreres as our "Opposition."

Let us, in our relations with our fellow-practitioners, endeavour to carry out the Golden Rule, even though some may offend seventy times seven. In the end the advantage will be for us and the profession. How often we forget that all our knowledge comes to us as a trust and should be administered as such. Let us beware lest we become profiteers.

Therefore let us magnify our Office. Let us satisfy the people with our sincerity and our efficiency. Let us pray for a renewal in our hearts of the ardour of Battle against Disease.

A MODIFICATION OF THE FAT IMPLANTATION OPERATION FOR REMOVAL OF THE EYE-BALL*

Ben Witt Key, M.D., New York.

HISTORY

The history of the study and development of the implantation operation, and the perfection of technique for the removal of destroyed or useless or painful eye-balls, dates back to the beginning of the 18th century, when abscission was practised by St. Ives, Critchett, Lagrange, Herman Knapp, Panas and others. Abscission or keratectomy and modification of this, soon gave way, for very obvious reasons, to the employment of evisceration, and the results of this method, in 1880, were considered highly satisfactory under the tutelage, experimentation and practice of H. W. Williams, H. Knapp, Noyes, Treacher Collins, Priestly Smith and many others. In 1884, Von Graefe read his classical paper on complete evisceration as an operation in most cases superior to enucleation. Simple enucleation, however, has been and is to-day, regarded usually as the operation of choice,—technique simple –quickly performed—little operative or anæsthetic shock—without complication—results good. But through the study of evisceration and simple enucleation, there began to be involved the theory of insertions, and in 1885, Mules brought forth one of the most interesting and far-reaching advancements in the whole study of ophthalmic surgery. His theory and practice of inserting a hollow globe into the scleral sac has been made, modified and variously added to by such men as Bissell, L. Webster Fox, Bickerton, Risley, Suker, Ramsay, Claiborne, Spratt, Allport and many others of known and tried ability. Of these Fox and Allport are to-day the special champions of this method, the latter using it, I believe, in particularly selected cases. Fox is known to have contributed much to the success of Mule's operation, in that his suggestion of severing the recti muscles aids in retaining the inserted ball; also his preference for a gold ball over many other substances proposed for insertion; his advocacy of a "conformer" devised by himself and used to great advantage; and finally, his care in technique and post-operative treatment of these cases. With the advent and development of the Mule's theory, many different substances, variously made and prepared, were used for insertion, i.e., aluminum, celluloid, sponge, silver, cat-gut, wire, paraffin and many others, indeed too numerous to mention. Experiments were made also to determine the result of insertions into *Tenon's capsule* as well as those into the scleral sac, and also even into partly retained sclerotic, that is, strips or bands of sclerotic. This led to the operation of delayed insertions of a gold ball and delayed implantations, both of which, I believe, are recognized to have a special and unique value in selected cases.

With this came the theory of implantation of fat into Tenon's capsule, recom-

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mended by Barraquer in 1901, followed by Lopez in 1903, Bartels in 1908, then U. Troncoso, Valez and Hans Lauber in 1910. All reported exceptional results from slightly modified methods of introducing the fatty mass, either without muscle fixation or by drawing muscles, capsule and conjunctiva over the implanted mass by means of a cat-gut suture. Stieren introduced fat into the orbit instead of into the capsule of Tenon. C. H. Sattler in 1903 transplanted costal cartilage into Tenon's capsule and reported some striking results.

INTRODUCTION

It is with some hesitation that I approach the discussion of the operation of enucleation and its modifications, because it is so commonly made and regarded as one without serious complication under ordinary conditions, and especially so because it is one for which there are so many variations in technique, and widely different opinions as to the best results to be derived in the particular case. But because of this difference of opinion, it has seemed to me that we are still striving for more exacting outlines of procedure in order thereby to arrive at more uniform and more perfect results. At this time in particular, it seems quite apropos, and perhaps our stimulus, our duty, that we should attempt to perfect this operation, since now and in the near future more of this variety of technique will be necessary than ever before in the history of the world. And since it is through imagination, correlation and experimentation that progress is made, it has occurred to me worth while to study and apply a technique for removal of the eye-ball, which is a combination of Barraquer's method of implanting fat into the capsule of Tenon and that of a method of attaching or fixing the ocular muscles after the fashion of Allport's suggestion in simple enucleation. This technique or modification has proven so promising in cases in which I have thus far used it, during the past five years, that I wish to ask your careful consideration of its merits.

CRITICISM

The usual criticism of the fat implantation operation has been, that liquefaction necrosis sooner or later takes place, so that the value of a fatty boss or bed, for the shell to rest upon, is lost in this manner, and therefore no more motility of the shell is gained than had the simple enucleation been made. Besides the disadvantage of the time required to make with care the fat implantation operation, and therefore the necessity of keeping the patient under anæsthesia a longer period, I believe it is often regarded as an unnecessary procedure, since little or nothing is to be gained because of the final liquefaction and absorption of the implanted tissue. On the other hand, it has seemed quite plausible to me, that the ideal result from the enucleation of an eye-ball, is that of a movable fatty stump of such proportion that it will push on the one side and at the same moment pull and give way or make room for the shell on the opposite side, in the promoting of maximum motility of the glass eye.

In the attempt to arrive at such a result, two factors have seemed absolute:—

First, to obtain a *healthy* and *permanent* growth of fat with Tenon's capsule.

Second, to attach the muscles in such a manner that this fatty stump will have decided rotary motion.

In accomplishing the first, it goes without saying, that the general physical condition of the patient is an important consideration; that the syphilitic, the ænemic, the nephritic, or otherwise debilitated individual will not respond to best advantage to a healthy and permanent growth of fat within Tenon's capsule. Closely related to this factor of health is the one of age, the younger the patient, the more promising the result to be expected, a matter, obviously, of vitality and of natural stimulus to repair. Previous orbital and previous ocular conditions are also matters of great importance in this connection. For example, there may be mentioned, certain extensive traumatic conditions affecting the blood supply to the part which would naturally interfere with proper nourishment to the implanted tissue; extensive exudation with organization and plastic band formation, so that the tissues of the orbit are contracted or fixed and may thereby limit proper motion of an implanted mass otherwise expected to possess free motion; also traumatic or nerve paralysis affecting the normal elasticity and contractivity of one or a group of the extrinsic muscles, which would result in certain loss of motility from proper muscle action upon the fatty stump; furthermore, if the eye to be removed should be a small or shrunken or phthisical globe, one could not expect to obtain the most satisfactory results, because of lack of space for sufficient fat to be implanted, as well as loss of muscle power and normal conditions of nourishment.

OPERATION

But given a young individual, up to par physically, having a globe of normal size, with no orbital abnormality or extrinsic muscle defect, the technique of this operation, which I am about to suggest, should promote a healthy and permanent growth of fat with maximum rotation of the super-imposed shell.

It may be outlined as follows:—

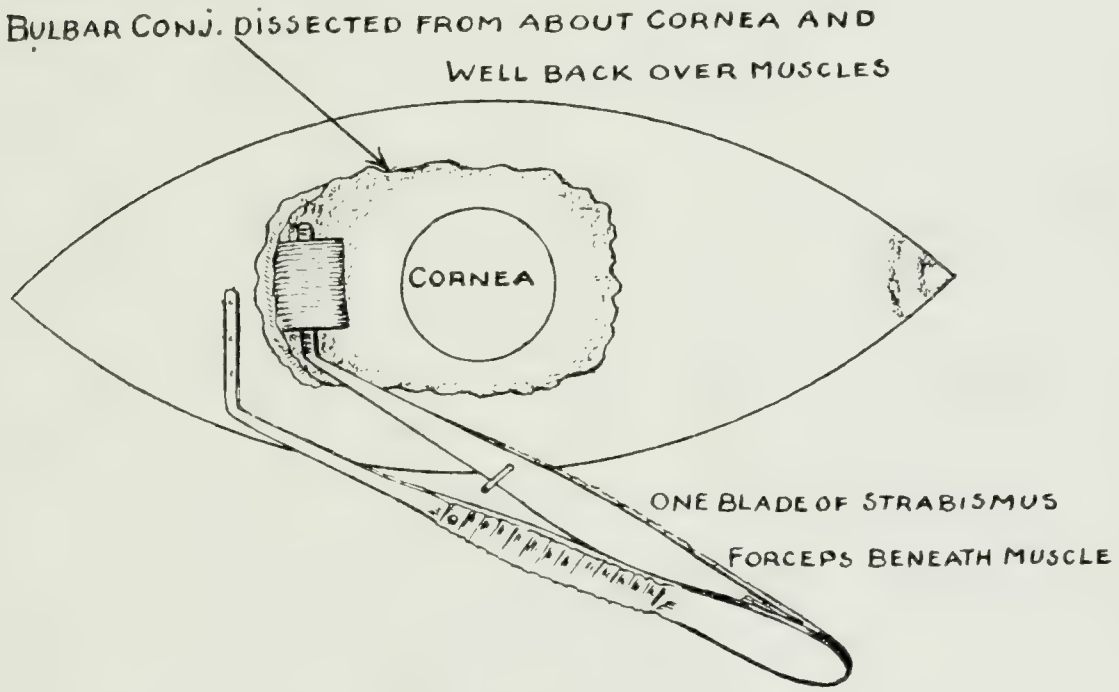
1. The conjunctiva is dissected from about the cornea in the usual manner, except that it is dissected well back over the four recti muscles.

2. Each of the four recti muscles is attached to conjunctiva and sub-conjunctival tissue according to the following suggestion.

For descriptive purpose the external rectus only is selected for attachment though all are treated in like manner, in turn, superior rectus, internal rectus, and inferior rectus. A small incision is made through Tenon's capsule just off the upper margin of the muscle attachment to the globe, some six milimeters from the limbus and in line with the tangent to the upper corneal margin. Through this opening, a strabismus hook, started vertically and held firmly against the sclerotic, if carried a half revolution will catch in full the external rectus muscle. The hook is now seen to push Tenon's capsule forward at the opposite side of the muscle, where an incision with scissors will free it, and the muscle is held forward on the strabismus hook. Then with the blades of a strabismus forceps held pretty widely apart, one blade is inserted beneath the muscle in exactly the same position as that occupied by the hook, care being taken that all the muscle fibres are spread

out on the teeth of the forceps blade, when the hook is removed (Fig. 1). Now before the forceps are closed, the adjacent conjunctiva is pulled forward, as far as possible, and well over the muscle attachment even beyond the corneal limbus, when the forceps are clasped firmly upon the muscle including conjunctiva (Fig. 2). The muscle is then cut free from the globe at a point between its attachment and the position of the forceps, and with the closed scissors minor muscle fibres are dissected free from the globe at this time. A chromicized cat-gut suture, size 000 or regular cat-gut 00, tripled armed (with three needles as shown in Fig. 3), is placed through muscle and conjunctiva from within outward, the central needle passing through the middle fibres of muscle (Fig. 3), and at a point just back of

FIGURE ONE



the position of the muscle forceps. Each end needle is then passed through the margin of the muscle on either side and through transitional conjunctiva, each loop of suture embracing half the muscle fibres. The central needle is now freed by dividing the loop in which it is held, and two sutures are thus made. These sutures, as indicated in Figs. 4 and 5, are placed at a point back of the position of the forceps and it is of considerable importance that they lie some distance from the cut margin of the conjunctiva, well into transitional conjunctival (or floor of the cul-de-sac) and through sub-conjunctival tissue of that part. Each suture is tied and cut short. The muscle being thus attached, is released from the forceps and can be seen to pull backward upon the area of transitional conjunctiva to form later the outer cul-de-sac of the fatty stump.

FIGURE TWO

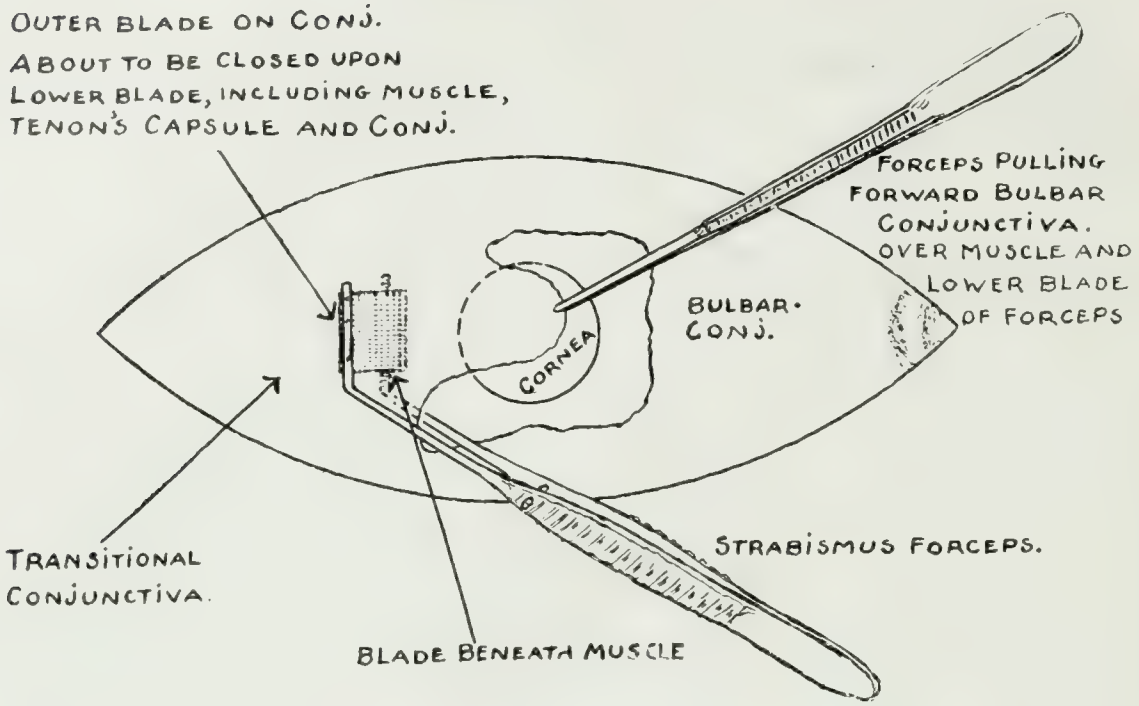


FIGURE THREE

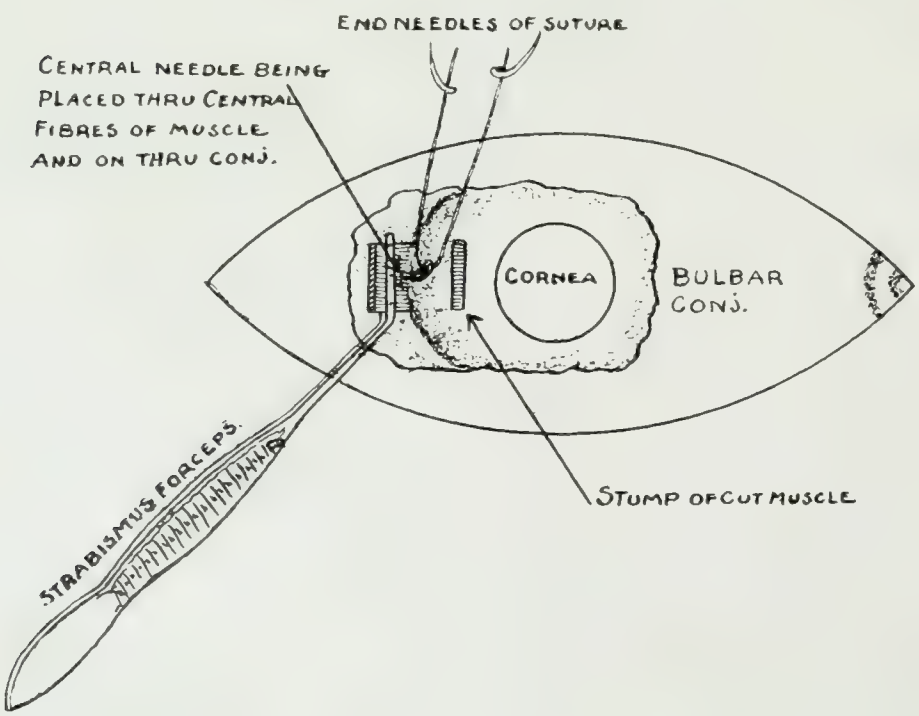


FIGURE FOUR

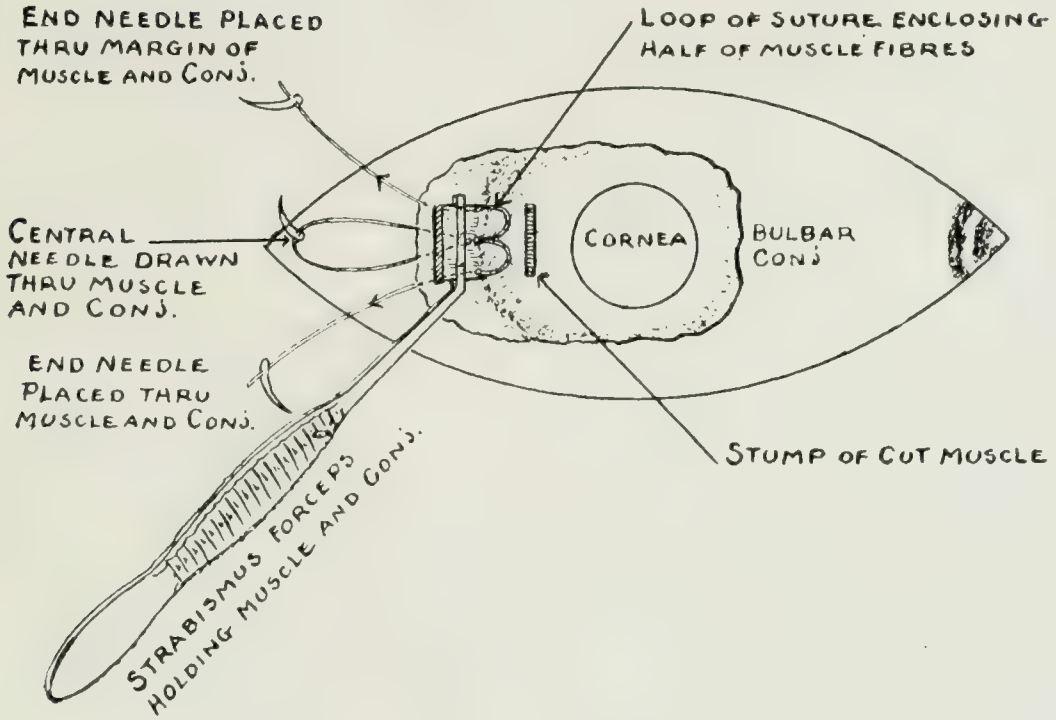
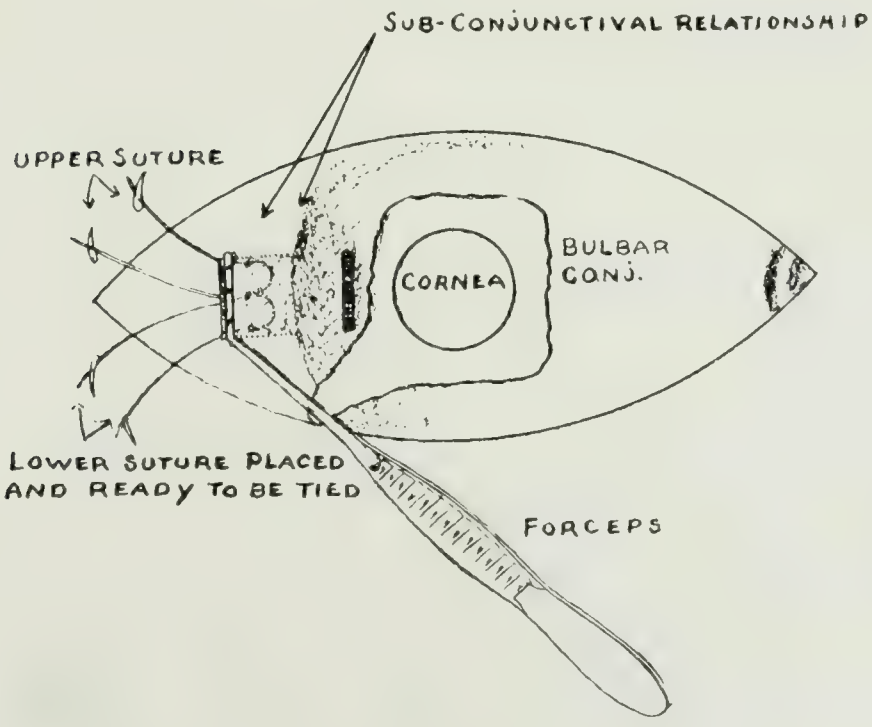

END NEEDLE PLACED THRU MARGIN OF MUSCLE AND CONJ.
LOOP OF SUTURE ENCLOSING HALF OF MUSCLE FIBRES
CENTRAL NEEDLE DRAWN THRU MUSCLE AND CONJ.
CORNEA
BULBAR CONJ
END NEEDLE PLACED THRU MUSCLE AND CONJ.
STUMP OF CUT MUSCLE
STRABISMUS FORCEPS HOLDING MUSCLE AND CONJ.

FIGURE FIVE



3. When each of the recti muscles has been cut and attached in this manner, a sterile purse-string suture of twisted silk, size No. 5, is placed in the free cut margin of the conjunctiva in the usual way, care being taken to make each stitch of it fairly close together and preferably beginning the suture in the lower outer quadrant (Fig. 6). The free ends of the suture are caught for convenience by a hemostat, the globe is delivered in the usual way, the stump of the internal rectus is held by fixation forceps, the globe rotated outward and the nerve divided. Care is necessary at this time in completing excision of the oblique muscles and soft parts, lest the purse string be severed, and so unnecessary and awkward delay lessen just so far nature's effort to repair.

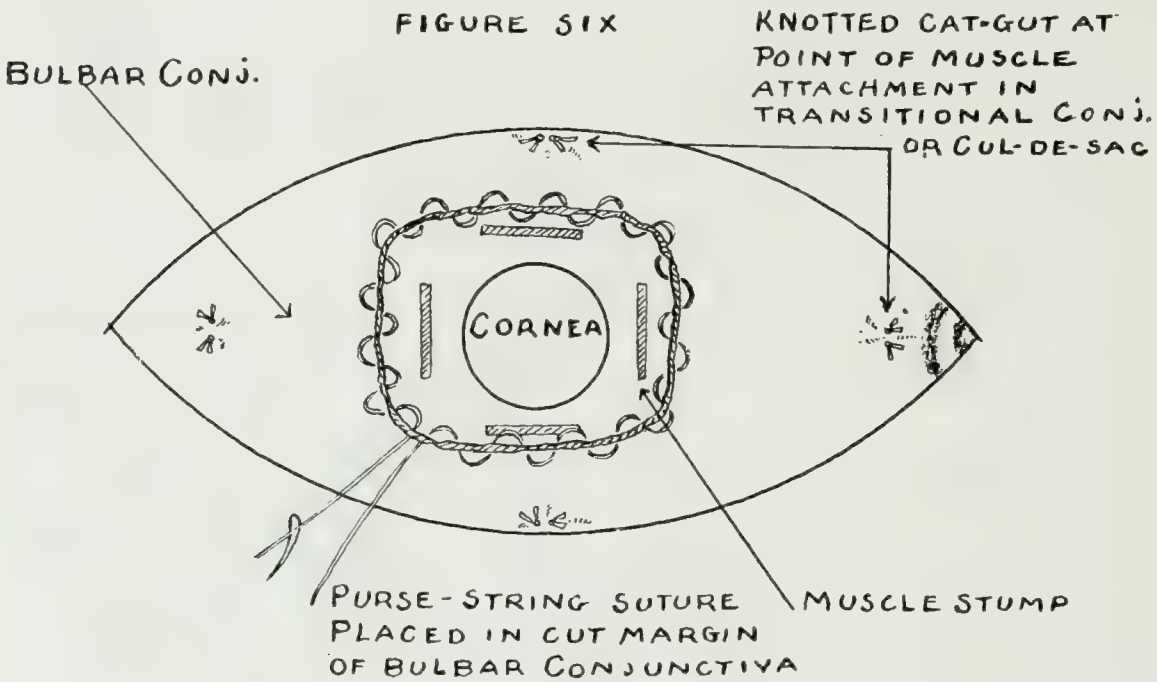


FIGURE SIX
KNOTTED CAT-GUT AT POINT OF MUSCLE ATTACHMENT IN TRANSITIONAL CONJ. OR CUL-DE-SAC
BULBAR CONJ.
CORNEA
PURSE-STRING SUTURE PLACED IN CUT MARGIN OF BULBAR CONJUNCTIVA
MUSCLE STUMP

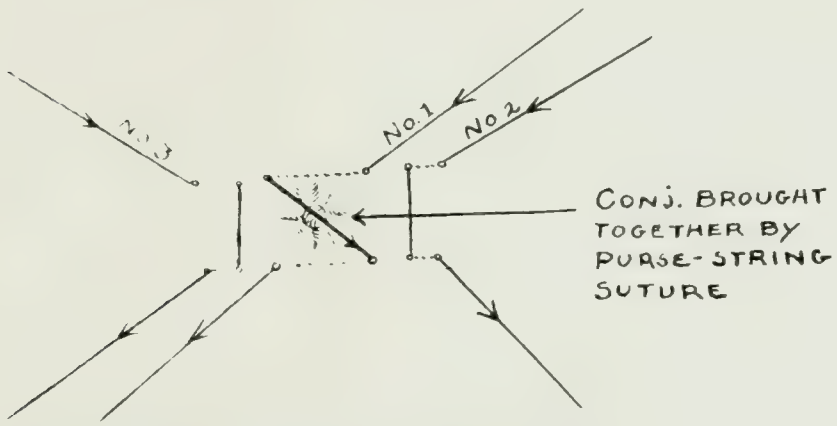
4. Immediately the globe is removed, the bleeding socket should not be irrigated with boric acid or any solution, nor should cotton pledgets saturated in bichloride or other solution be forced into its depths. On the other hand a gauze pad saturated in pretty warm normal salt solution placed firmly in the bleeding part is much to be preferred, and should be allowed to remain so while the fat is being prepared for implantation.

5. On the front of the left thigh sufficient fat for the purpose is usually found, and is much to be preferred to that of the buttocks since it is more delicate in texture than that found in the latter location and is decidedly more vascular and readily obtained in the lying posture. It may be removed by means of a vertical incision two and a half inches long through skin and fascia, then enucleated in an oval mass. The left hand of the operator or of an assistant making pressure below the wound will greatly minimize bleeding. It should be removed in one

piece and without any attachments of coarse fascia. Just the amount of fat to be implanted is relative of course, and suffice it to say, that it would seem to be good judgment to fill the capsule of Tenon under firm tension only, any excess of this being excised as the purse string is drawn tightly and tied.

6. Three mattress sutures of twisted silk, size No. 5, are placed across the pouch of conjunctiva made by the purse-string suture, and are so arranged that they invaginate the pouch and support the conjunctiva in firmly holding the contents of the capsule in place. One cross mattress suture is placed directly over the pouch, and one on either side, each close to the central one, as in Fig. 7. Each lateral

FIGURE SEVEN.



SILK SUTURES REINFORCING POUCH OF CONJUNCTIVA BROUGHT TOGATHER BY PURSE-STRING SUTURE, AND CAUSING ITS INVAGINATION.

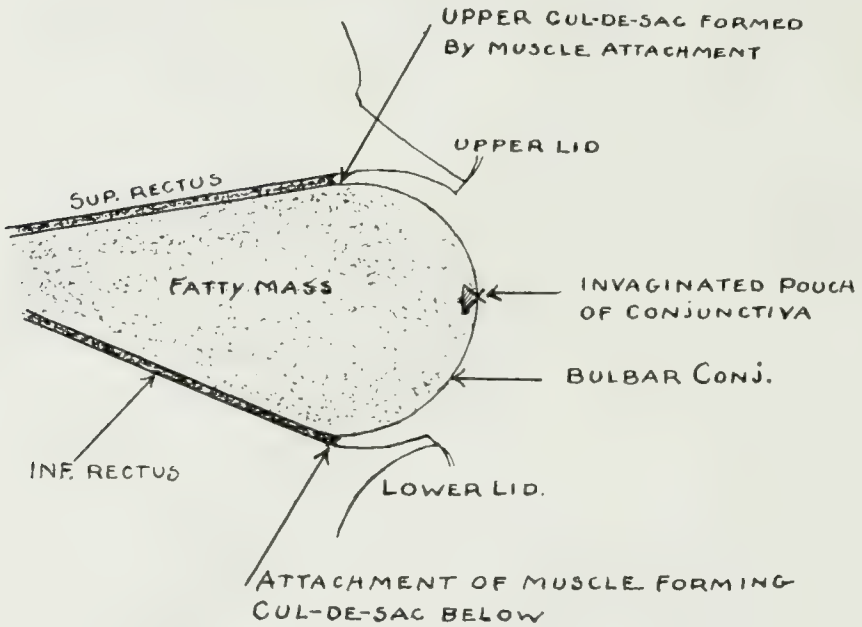
1ST No. 1 IS TIED
2ND No. 2 IS TIED
3RD No. 3 IS TIED
4TH No. 2 AND 3 TOGETHER TIED

suture, when tied, is knotted across the pouch with the opposite suture. A cross section showing in the relation of things as they appear now, is indicated in Fig. 8.

7. The cul-de-sacs are now irrigated with warm salt solution, and a gauze dressing saturated in warm salt solution is placed over the closed lids. A piece of rubber tissue, two adhesive strips and a bandage just firmly, not tightly or loosely applied, completes the dressing. It is much to be preferred that both eyes be bandaged for four or five days. If unusual restlessness occurs, it is insisted upon that the unoperated eye be kept closed and perfectly quiet or an eye patch applied for six or seven days. Each day following operation, the cul-de-sacs are irrigated with warm salt solution and dressed in the same manner as at the first dressing. The patient is confined to his bed for at least four days.

8. Careful attention should be given the leg wound in order that primary healing take place and no unnecessary complication arise from this source. This care begins with suturing of the wound, when two strong guy sutures deeply placed will bring the soft parts and lips of the wound together. Interrupted sutures of

FIGURE EIGHT



VERTICAL CROSS-SECTION OF RELATIONSHIP OF PARTS

twisted silk are used to close it. At the lower end of the wound a small gauze drain should be left in place for the usual surgical purpose of preventing stagnation of lymph and blood, so readily susceptible to subsequent infection. A simple gauze dressing (with adhesive strips to support the sutures in holding the wound together) and a light bandage is applied. This wound should be dressed every second day.

As to the fitting of a glass shell, I believe it is necessary to mention the importance in these cases, of insisting upon the proper size of the shell, its suitable shape and relative convexity, in the effort to make it conform to the proper level and appearance of the other eye, not only in motion, as far as possible, but in station and in repose as well. The concave posterior surface of the shell should be made to enclose the fatty stump and this concavity should be slightly in excess of the relative convexity of the fatty mass, for the reason that the soft stump thereby fits into, and is gradually moulded into the back of the shell and so produces more effective motility of it. A shell should not be inserted for six weeks after operation.

ANALYSIS

May I now enumerate and analyze the essential points in the technique of this method of enucleation as outlined above:

First—the conjunctiva is dissected well back over the attachment of the recti muscles to allow for a subsequent attachment of the muscles to the sub-conjunctival tissue of the transitional conjunctiva. This bulba conjunctiva will contain, therefore, the forward portion of the implanted mass and so forms a boss or stump of fat.

Second—the manner of attaching the muscles in the transitional conjunctiva, places them at the sides of the fatty stump and thus allows the action of the muscles to copy, as closely as possible, the mechanical perfection and effect of nature's method of muscle action from the *sides* of the eye-ball, rather than from in *front,* when contained in the purse string suture of the conjunctiva after the fashion of the original operation. When the force of muscle action is that of a pulling from the front of the fatty stump, the fatty mass is, so to speak, caught between the force of muscle action and literally churned, and squeezed or mashed to the degree that liquefaction, sloughing and absorption sooner or later follow. But where the action of the muscles is from the *sides* of the stump and their action somewhat *limited* and *controlled* by the attachment in the transitional conjunctiva, it will produce on the one side sufficient depression in the transitional folds for the adjustment of the shell in motion, and will on the other side relax and allow for a pushing forward of the shell in the opposite direction. Furthermore, *please note* that this is *not only* an important factor in promoting the *best rotary* motion, but also is fundamental in allowing for a *healthy* growth of fat as well as *aiding* in its permanence there.

Third—suture material should be sufficiently resistant to hold for four or five days, the reason for which is evident. It is true that silk sutures eventually slough out, but it is well that they do in this instance, and for the special purpose of allowing free drainage of natural waste substances.

Fourth—with every reasonable care and by every means to assist nature to repair and preserve the implanted tissue:—by inserting a bloody piece of fat into a bloody socket without irrigation; by implanting one piece of fat, without fascia attachments, of sufficient amount and not an excess of it; by the use of warm salt solution, and dressing saturated in salt solution; and finally by applying a bandage with just the right amount of pressure, the bandaging of both eyes or insisting upon absolute quiet of the other eye.

It may be terrifying to a patient to awake from ether, with the good eye blinded by a bandage, and conscious that one eye has been removed. It is therefore advisable to bandage or apply a patch to the other eye as soon as he has thoroughly recovered from anæsthesia.

Lauber in the Annals of Ophthalmology, 1907, says that: "If the reason is sought for the unfortunate results following the various implantation operations, it can be found in the *nature* of the implanted body itself. Such transplanted structures are expelled either from chemical reaction, with resultant inflammation, as

mentioned by Zeitz and Hertel, or in the production of *traction* upon scleral and other surrounding tissues. The smaller the chemical activity of the implanted body, the better will it endure the test." So this is one of the principal reasons why Lauber prefers the use of fat for implantation.

Expulsion of fat by muscle action is certainly a minor consideration, when the muscles are properly fixed in the floor of the cul-de-sacs as described above. More important than expulsion is that of absorption and liquefaction of the mass. In this connection may I state that presentation of or appearance of the fatty mass, for the extent of one-half to one centimeter, may be noted on the fifth to the seventh day, when the conjunctival sutures may begin to give way, but under quiet conditions of the other eye, this will in the course of a week be entirely covered by granulation and conjunctival tissue over-growth. I have never seen expulsion or loss of any part of the fatty mass. There is *always* some slight discharge found on the dressing and in the conjunctival cul-de-sacs on the sixth to tenth day, but this is the result of natural chemical changes of tissue adjustment and growth. May I ask, if skin transplantation, or bone, cartilage or other implanted tissue anywhere in the body, takes place without exfoliation, partial absorption, secretion and excretion of waste substances? We know that they do not. We know that this is nature's method of repair and growth, true chemical changes giving off their waste products.

On the other hand, if muscle traction upon the fatty mass is too great or the force of this muscle action squeezes it to liquefaction, then implanted substance is lost in this manner. And yet function of the recti muscles must be preserved intact for purposes of motility. This method of suturing each muscle with cat-gut, as I have suggested, will give sufficient muscle action, and at the same time *limitation* of action, for the following reasons:—

1. Traction from muscle action is from the sides of the fatty mass.
2. Their points of attachment being in the floor of the cul-de-sacs, make their action limited by the palpebral conjunctival attachments to the lids.
3. The cat-gut sutures do not hold but for two or three days, thus allowing for some adjustment and balance of their action.
4. Being attached in the forvix, the length of each muscle is a trifle shortened and muscle strength therefore weakened, the transitional conjunctiva giving way partly with traction and partly from its own elasticity.

Hemorrhage which occurs immediately following enucleation must be allowed to subside before implanting the tissue. This may be an *important* factor, even so *serious* a factor, as to mean failure in certain cases, where profuse hemorrhage or continued slow hemorrhage allowed to remain admixed with the fat would interfere with normal growth and tend to swell and burst forth the conjunctival sutures. In the ordinary case, of course, this is of minor importance, since troublesome hemorrhage rarely occurs.

Reaction, swelling and discomfort from this technique is only a trifle more evident than that following simple enucleation, and not to be compared to that following one of the insertion operations. A "conformer" such as that suggested by

Fox to check and relieve œdema, to support the mass and aid in holding the sutures in place, is entirely unnecessary in this fat implantation. There is no marked œdema to combat, and I have not seen, in a single case, sufficient reaction to find it necessary to apply ice compresses or any lotion whatever. The prothesis is never painful, as occurs occasionally in the Mules operation, nor is there pressure on the optic nerve or danger of sympathetic ophthalmia more than from simple enucleation.

I believe the operation of choice in enucleation should be that which is the safest, the most efficient, that which gives greatest motility of the shell, the best cosmetic result. If this operation is made under strict asepsis, without any undue violence, and yet with definite and direct procedure, the results are strikingly good, most gratifying to both patient and oculist.

CONCLUSIONS

In conclusion—the disadvantages of this operative technique appear to be:

1st. Length of time under anæsthesia.

2nd. Both eyes bandaged, and the necessity of quiet and rest.

3rd. Hospital stay is longer.

4th. Unsatisfactory in certain conditions of poor health, specific disease, severe injury, microphthalmus, extreme phthisis bulbi.

5th. Contra-indicated in malignant disease, pan-Ophthalmitis and in the aged.

The advantages are:

1st. Permits a healthy and permanent growth of fat within Tenon's capsule.

2nd. Produces maximum motion of a glass shell in a soft socket.

3rd. Gives sufficient prominence of the shell to conform to that of the other eye.

4th. The convexity of the shell and its prominence, makes a palpebral fissure of about the same breadth as that of the other eye.

5th. It tends to sustain the moisture of the glass shell to a degree that drying of the surface and the collection of excretory substances is at a minimum, everything else being equal. This is due to the collection remaining behind the shell and easily demonstrated by the discharge which appears on removing the shell.

6th. Tearing is at a minimum, the lacrymal function in part and in some instances almost wholly restored.

7th. And finally, an advantage not to be overlooked, is the encouragement and reasonable assurance to the patient, that at least he is not compelled to look forward to the possession of a stationary, constantly drying or tearing, deeply set and staring glass eye.

I have made this operation in twenty-five cases, and presented to the Ophthalmic Section of the New York Academy of Medicine, the case of a boy eight years of age upon whom I performed it three and one-half years before. It was shown how prominent and movable a fatty stump remained in this case, and the length

of time since the operation was made, indicates the probability of its permanence. Also a case was presented, in which I made the operation two weeks before, through the courtesy of Dr. W. E. Lambert at the New York Eye and Ear Infirmary, and it was noticeable at this time, that there was no sloughing or absorption, and the well formed cul-de-sacs were evidence of the effect of this method of modifying the original fat implantation operation.

This method of implanting fat into the orbit, where the simple enucleation has already been made, so-called delayed implantation, is far more satisfactory than one may realize. This I have made in one case with sufficient improvement to warrant its performance.

UNITY AND ORGANIZATION

MEDICINE HAS ACHIEVED UNDREAMED OF THINGS BY UNITY AND ORGANIZATION DURING THE LAST FOUR YEARS.

The Lancet, Nov. 16th, 1918.

What a world of truth is wrapped up in these words! What a glorious record has been established by the Medical Services! Not only have thousands of lives been saved, the sufferings of many thousands been alleviated, but unborn posterity has yet to reap the benefits accruing to them from the labours of those who have valiantly established such a proud record.

Unity sounds the key-note. It behoves all right-thinking men to meditate on this point. This same unity of purpose and masterly organization so essential in time of war, could be and should be maintained in time of peace.

The medical profession owes a duty to the universe and to itself to see to it that team-play is evidenced throughout our land. The get-together plan as opposed to every-man-for-himself leaves no ground for comparison.

Now is the accepted time for Medical Societies throughout the land to fill up their ranks.

Unity and Organization—Think well on the deep significance of these two words.

AMPUTATIONS

MURDOCH CHISHOLM, M.D., L.R.C.P. LOND.
HALIFAX, N.S.

Some one has said that Amputation is a lost art. There is a modicum of truth in this hyperbole. In days not beyond the experience of some of us, myself included, the percentage of amputations in the aggregate of all operations was exceedingly high. Now it is very low, so low, that the profession has become rusty, and needs an occasional brush, or rub up, to retain its efficiency.

Among the causes contributing to the low percentage of amputations, are the comparatively fresh fields opened up to the surgeon in other regions of the body. Among these the abdomen stands an easy first. Then come the sacs of the joints, pleura, meninges and pericardium. In the extremities a more efficient knowledge of the proper treatment of joint cavities has saved many amputations. So also with regard to peripheral infections. How often do we see the loss of a terminal phalanx, or even a finger, from neglect or faulty treatment of a whitlow? It may seem a far cry from amputations to whitlow, but on closer examination, it will appear that the prophylaxis or prevention of amputation takes in even whitlow. Its prevalence in surgical practice justifies my detailing what I have learned from experience in dealing with it. On the palmar surface of the finger we have a tough, thick, opaque epidermis. Under that is a *translucent* dermis, and under that again in varying thicknesses are fibro-fatty capsules or cones, surrounded, held together and bound down to the deeper fascia and skin by tough fibrous filaments. Through a prick, or scratch, some germ infects one or two of these firmly bound capsules or cones. One cone infects its neighbor laterally and downwards to the sheath. As a result of the inexpansile fibrous interspersions and envelopes of the cones, pain predominates. The tendon sheath is secondarily infected, and in most cases that takes a few days. How important, therefore, to find the focus of infection and treat it. This may be in mid-line or to either side of it. We have to guide us the seat of greatest tenderness on very light pressure. But better than that, is slicing off the thick epidermis with a sharp knife. The translucent dermis will then often show the seat of trouble as a yellow spot of pus, or earlier, as a local area of increased redness. One, two, or three linear incisions close to each other over it and we are easy victors. Unnecessary to add that the incisions must be over the infected area, wherever that may be, not necessarily in mid-line and not down to the tendon, unless the case be old and you have reason to believe that the tendon sheath is involved.

The prophylaxis of amputation in injuries to the fingers is most important. Never amputate fingers immediately after injuries, without giving due weight to

the recuperative powers of repair in the hand. We must give nature a chance. Thorough disinfection and watchful waiting will often surprise us. Therefore in those cases, except in the most hopeless, our motto should be, disinfect, wait and watch.

A late experience justifies some reference to the prophylaxis of amputation in frost bite. Out of forty-two cases coming from the West Indies, a large percentage bitten in the feet was marked for amputation very shortly after being admitted to the military hospital. Their feet became swollen and œdematous. The skin covered with blebs, was gangrenous over large areas. Toes and subcutaneous tissues appeared devitalized. But yet, under watchful waiting for three weeks, with antiseptic dressings, like hot boric acid solutions, or Balsam Peru, many of the cases escaped mutilation, some with the loss of a toe or two, and one with the loss of the metatarsals. To wait for a well developed line of demarcation is the important lesson taught by these forty-two cases of frost bite.

Much more could be said upon the prophylaxis of amputations by the proper treatment of peripheral infections, but it will be found in literature. The scope of this paper is bound by personal experience.

The prophylaxis of amputations in joint affections is a very extensive subject. I have already reported two cases of long standing with multiple sinuses around the hip and thigh, in which to reach healthy bone, I had to take away the upper two-thirds of the femur, and yet they both walked out of the hospital with no very pronounced limp.

The prophylaxis of amputation in the aged with commencing gangrene of the toes is a subject of very considerable importance. Much can be done successfully by rest in the horizontal position with the limb raised, by the use of vaso-dilators like glonoin and whiskey, and by constant galvanic stimulation. In these cases, whiskey to the tissues is like a shower of rain to the desert after a dry withering simoon.

When amputation is unavoidable the question of where and how to amputate is first to be considered. In senile gangrene the extent and rapidity of involvement must guide us. Rapid extension denotes profound arterial changes. Then amputation must be high, either in the thigh or close to the knee below. If below the knee, the bilateral flap operation at the old seat of election, a hand breadth below the joint, should be adopted. Here the arterial supply is fairly active, and can take care of such short flaps as the bilateral in any gangrene involving the toes. Gangrene involving the tarsus or closely approaching the ankle, denotes an arterial condition which requires amputation above the knee.

In young people, the problem is different. Amputations in these are generally due to injury, frost-bite or tuberculosis. Here the surgeon's burden is the saving of function; for life, as in old persons, is seldom endangered; and the rule is to amputate low. There are exceptions.

A mid-tarsal or Chopart gives a less useful stump than a Syme, and an amputation above the ankle is far less desirable than one at the junction of the lower and middle third of the leg, or even through its middle third. I have seen a Chopart

done in the United States turn out a helpless cripple, and a low amputation of the leg cause much suffering from cold. In the one the balance between the flexors and extensors was gone, the heel was drawn up by the tendon achilles and the patient walked upon the end of an ulcerated stump. In the other, as in all such, the circulation in the lower third is very meagre, there are no muscular vessels, and in cold weather it is impossible to keep the stump warm.

I may here say that Dr. Olmstead, of Hamilton, to whom I read this paper, took exception to this last statement as to the cause of the coldness complained of in these low amputations. He is an authority, having worn an artificial leg for years. He says that the coldness is due to non-use and that every stump should be made, trained and developed to bear the body weight. He succeeded in his own case, though, to begin with, he had a very tender stump. He recommends cutting the periosteum in the line of bone section, raising it from the bone for a quarter of an inch, rasping the corners and sharp edges with a rasp, then scraping out the medulla for a half inch. It is replaced by blood clot, which becomes organized and forms a flat pad of fibrous tissue in line with the end of the bone. He says that the exercise in supporting the body weight will always, anywhere, keep the circulation active.

Instrument makers have gone to the other extreme, in maintaining that the only use of a stump is to swing the artificial limb, and that the body weight must fall upon the upper bony prominences of the limb. I believe Dr. Olmstead's opinion, fortified as it is by his own personal experience, is irrefutable. His advice about cutting the periosteum short and scooping out some medullary tissue is based upon sound physiological reasons. I have seen irregular bony stalactites form where the periosteum was cut long. That does not often happen, but it does occasionally.

In cases of gangrene from diseased arteries in the aged, the circulation of the flaps is conserved by cutting the periosteum low and raising it with the flaps. Here the risk to life must supersede every consideration of function.

I have said that the operation of choice in the aged, with weak circulation in the leg, is the bi-lateral flap. It is not in the young. In these, Lister's operation is away ahead of any other, and no flaps should be devised in these which will leave a scar on the end of a bone, much less on the front of the tibia. Of all scars, that on the front of a tibia is most crippling.

After deciding where to amputate, and whether by the circular, or flap method, then comes the question of sufficient covering for the bone. Here one must be guided, not so much by classical rules, as by the conditions to be dealt with. The situation of the longest flap, whether to one side or the other, posterior or anterior, will be influenced or decided by the vitality of the parts, remembering, however, that a posterior long flap, of all flaps, is the most undesirable. It must be much longer than an anterior flap, for reasons which will be given further on. It is difficult to drain, except it be punctured, and its weight drags upon the stitches in front. It is liable to fall off from the severed structure, which results in a hæmatoma, and this again, is liable to sepsis. Worse than all, it leaves a scar in front of the tibia.

The question of sufficient covering for the end of a bone is mostly mechanical.

Half the circumference covers the side of a bone; it must therefore cover its end. I have been in the habit of illustrating this by a hard hat. Place a chalk mark on one side of the crown, and another directly opposite. Now, the length of tape that reaches between those two points on the side, will also reach between them over the crown. Hence, half a circumference must form the basis of the length of our flaps. In other words, the sum of the length of both flaps should approximate half the circumference of the limb at the point of section. It must not be forgotten that the end section of a bone is straight across it and therefore of less length—especially when, as in leg amputations, its upper edge is bevelled—than a line over the side, which is really its circumference. Hence, we can afford to make the lengths of the flaps a little shorter than half the circumference of the limb. The relative length of the flaps is determined by the position of the bone in a cross-section of the limb, its thickness, and the necessity, in the young at least, of having the scar to one side of it. Both in the thigh and leg the bone is superficial in front, but deeply covered by muscles behind. It will therefore take a much shorter anterior flap to safely cover it, than it would take if a thick layer of muscles were in front of it. For the same reason a posterior flap must be much longer than an anterior one in both the thigh and leg because of the thick mass of muscles found posteriorly in those regions.

Mechanically it can be shown that it takes two-thirds of half the circumference at the point of section, for an anterior flap, and half of that for a posterior one. Take a limb 18 inches in circumference. Half of that is 9 inches, 2/3 of that is 6 inches, and half of 6 is 3, which added together make 9 inches, which is half the circumference of the limb. Now, owing to the fact, already explained, that our line of measure for the flaps is as a diameter to half a circumference, we can safely estimate the length of the anterior flap at a free half of half the circumference, and a half of that for the posterior flap.

It must not be forgotten that the tibia is much thicker than the femur, and that an anterior flap in the leg must therefore be a little longer than the same in the thigh. Lister advises one diameter in the former, but only 7/8 of a diameter in the latter. Other authorities place the relative lengths at 7/8 and 2/3.

My experience has taught me that Lister's method of estimating the length of flaps by diameters gives uncertain results. It is all right in the hands of an expert, but a novice needs more definite measurements. He, Lister, placed his thumb in front of the limb, then extended his forefinger till it reached the level of the posterior aspect of the limb; keeping the forefinger thus extended, he swung it round till it reached the axis of the limb in front. This marked the length of the anterior flap in the leg, and seven-eighths of it marked its length in the thigh. All very simple in hands like his. A beginner had better measure the circumference of the limb at the point of proposed section. Marking that point well, let him call half the circumference as his basis. From a half to two-thirds of that will be the required length of the anterior flap, and about half of that for the posterior. It follows, of course, that in bilateral flap operations the length of each flap must be half the circumference. In the aged, where there is very little retraction, a little less than this will be ample.

The bi-lateral flap operation, which I prefer in the aged, where this operation is indicated, differs somewhat from that given in the text books. I go down to the periosteum in front and fascia behind with my flap incisions. I raise the skin and superficial muscles for about an inch, then cut the muscles across with a few sweeps of the knife down to and through the periosteum all round the bones. Finally, I retract skin muscles and periosteum to the required height and apply the saw, taking care, of course, to cut the fibula a half inch higher than the tibia. This operation is a mixed flap and circular. It disturbs the circulation less than any other, and in the aged the tissues are lax, so that their retraction is by no means difficult.

The after treatment of amputations is most important. Our aim is healing by first intention, and to obtain this, we must secure the most absolute possible comfort and rest. A well fitted bandage, secured by an overlapping strip of adhesive, and over all a Gooch splint, which forms a comfortable trough for the stump, also a position of semi-flexion upon soft pillows, must be secured. It is unfortunate that in 24 or 28 hours, the former if there be much oozing, the rest thus secured must be disturbed to remove the drainage tube. By this time all the opposing surfaces have adhered. But the adhesions are easily broken by rough or unskilful handling. The greatest gentleness and care is required at this dressing. If the hæmostasis has been what it should be, the drainage tube is now dispensed with, as also all further dressing till the stitches are removed, about the tenth day, unless the temperature shows signs of sepsis.

I have lately devised a method of dressing stumps which lessens the capillary oozing, facilitates removal of the drainage tube, contributes to primary union and materially adds to the patient's comfort.

I use two strips of dressing sufficiently thick; one an antero-posterior strip, in width a little less than a quarter of the circumference of the limb, and long enough to reach some five inches above the end of the stump; the other a lateral strip of the same length, but wider. The antero-posterior strip is first applied. Then a lot of loose gauze is applied around the drainage tube on either side, and the lateral strip is placed so as to cover this and the end of the stump from side to side. Now a strip of adhesive is applied to the skin some distance above the dressing in front, carried down over the end of the stump with moderate pressure and up again behind, far enough to take firm hold of the skin. A lateral strip of adhesive is applied in the same way, and over all a roller bandage; a Gooch splint finishes the dressing.

The benefit from this method is recognized when removing the drainage tube, after the first twenty-four hours. The antero-posterior dressing is not disturbed. The lateral strip and loose gauze is taken away with the tube, fresh gauze applied and the dressing finished with a minimum of disturbance and a maximum of comfort.

CURRENT MEDICAL LITERATURE

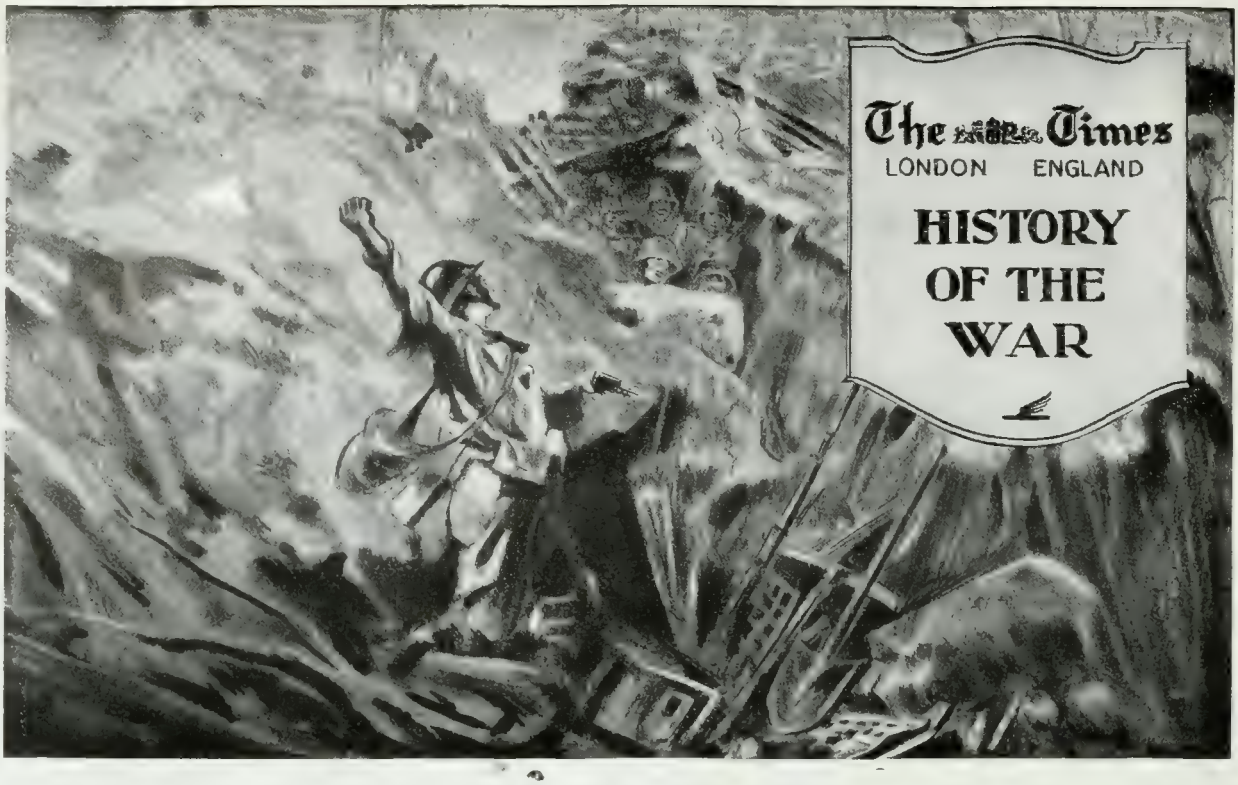
BONE-GRAFTING

Appearing in *The Lancet,* Feb. 1st, 1919, an interesting paper entitled "Mandibular Bone Grafts," was presented by Major C. W. Waldron, C.A.M.C., and Capt. E. F. Risdon, C.A.M.C., illustrated by cases and numerous slides. The authors state that although bone transplantation is a surgical procedure of long standing, the unexampled opportunity afforded by war injuries has enabled a careful study to be made of its limits and possibilities, especially in cases in which the mandible has been seriously broken up. Within a few days of being wounded, most of the cases had arrived at a special centre for treatment, and the large number of cases which had achieved good union testify to the fine results of those who specialize in this work. They consider that the close and continuous co-operation of surgeon and dental surgeon is of prime importance. In early stages the mouth must be kept as clean as possible, special care being taken in regard to septic pockets and cavities, and in this stage dental splints should be used, the hindering sequestra being from time to time removed, for the prevention of displacement and to ensure due control of the edentulous posterior fragments. Dental splints are usually required for at least two months. In cases where non-union is obvious there should be early attempts at movements of the jaw for the purpose of avoiding atrophy and articular ankylosis. Careful periodic examination of the teeth and the extraction of such as need it is regarded as important. Teeth which are of service in the immobilization of the parts should be preserved, and there should not be any great pressure on the teeth. Drainage must persist as long as there are any unhealed sinuses. At least six months should elapse since the disappearance of sepsis and inflammation before bone-grafting operations are attempted; and when the un-united fragments are strong and easily controlled, so that the patient is able to masticate with the aid of splints, this period before operation can be extended. The authors believe that quite a number of failures have been attributable to operation having been done too early. Grafts should include both the periosteal and the endosteal surfaces; in fact, all the elements should be comprised—the graft will then most nearly approach the physiological. When open cancellous bone, such as that of the rib, is used, replacement is rapid; it is less rapid in grafts cut from the face or the tibia. The relative osteogenetic activity of transplanted bone varies with the individual case. The authors' work has been done with autogeneous bone-grafts. In most instances it is preferable to fix the fragments in good position by means of strong dental splints, and carry out the operative procedure accordingly. The splints should be cemented to the teeth at least a week before the operation to allow the buccal mucous membrane to become habituated to their presence. In 19 of the cases dealt with the anæsthetic employed was reetal oil ether, and the authors think highly of it. Every effort must be made to avoid perforation into the mouth cavity. The edge of the fragments should

be trimmed back 2 cm, and intervening cicatricial tissue excised and discarded. Simple instruments have been preferred; it seemed dangerous to use an electrically driven saw in such a confined space. After a good deal of experience they believe bone from the iliac crest gives the best results. The patient should be kept in bed a few days to prevent the formation of a hæmatoma, which might become infective. If a case requires closure of the mouth for months it should be opened at intervals for inspection.

DISCUSSION

Captain W. E. Gallie, C.A.M.C., said that some of the old beliefs had been rudely shaken as a result of experience with war injuries. In the clinic to which he is attached many experiments on dogs had been carried out. When a piece of living bone has been separated from its circulation and implanted elsewhere in the body of the same patient the immediate result is seen to be a coagulation of nerves and vessels, to which the surrounding lymph cannot percolate. This means the death of all the cells in the lacunæ and of most of those in the Haversian canals. The absorption of these structures occupies three to four weeks. On the open mouths of the canals are osteoblasts, which are able to absorb lymph. Ten days after implantation the proliferation of the osteoblasts is well established on both the endosteal and periosteal surfaces, and in a few days new bone formation can be seen on these surfaces. These proliferating osteoblasts attack the dead bone of the graft and quickly cause excavations. Meantime, a re-establishment of the circulation has been taking place as a result of the ingrowth of new blood vessels into the mouths of the Haversian canals. This occurs in about two weeks. Ultimately the whole graft is seen to be permeated by vessels and osteoblasts. The union of the graft takes place by the laying down of new bone on the surface. If from the graft endosteal and periosteal surfaces are removed very little osteogenesis takes place from the graft itself. The rapidity with which the changes occur depends on three factors: the size of graft, its density, and the abundance of the osteoblasts on the surface which survive. In some cases months must elapse before replacement can occur. When boiled bone is used for grafts the changes take place at a definitely slower rate. Where there is a gap to be bridged only autogenous grafts promise success; if boiled bone be used here the living elements will slowly disappear. The great point to aim at in grafting, as it is only on the surface that living osteoblasts survive, is to have the largest osteoblast bearing surface possible; hence the width of the graft should be greater than its thickness. Except in cases where a strong graft is essential tibial bone should not be employed; that of the rib is better as it is not only more porous, but is better supplied with lymph. It is wise to split the graft longitudinally into a number of portions; in that way a large number of osteoblasts will be given the chance of survival. Boiled bone-graft plates have been largely used at this clinic instead of Arbuthnot Lane's metallic plate, and have given much satisfaction. Not only is there no likelihood of these getting loose, but at the end of ten months (as shown in slides) the only evidence of irregularity is a slight fusiform swelling, and even this disappears after a still further interval.



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PENSIONS AND THE PRINCIPLES OF THEIR EVALUATION*

LLEWELLYN AND JONES.

Review by CAPT. A. T. BOND, Assistant Medical Adviser Board of Pension Commissioners, Ottawa.

At a time when the minds of all thinking men are engaged on the problem of reconstruction, no problem is more urgent than that of appraising the effects of disease and injury on body and mind of the discharged soldier. "Pensions and the Principles of their Evaluation" is one of the first extensive contributions to this important subject. It is written primarily for medical men whose lot it is to determine grades of incapacity, but it contains much other matter of value and interest.

From the brief but interesting history of pensions given, it is evident that great difficulties await the attempt to formulate an equitable and discriminating scheme of pensions.

The authors discuss pension administration as it exists in Great Britain, referring especially to the Ministry of Pensions and various Royal Warrants. They enunciate the principle that pensions should be in proportion to the disability without reference to the former occupation of the pensioner. In dealing with unreasonable refusal of treatment, they comment on the inconsistency of confining refusal to certain forms of medical and physical, but not surgical treatment, an inconsistency that Canada has been able to avoid. In Great Britain, as in Canada, it is established that as long as a man's disability remains in statuo quo, he has a right to a fixed pension that will not be reduced, if by training he fits himself to increase his earning power.

Under the alternative pension scheme of Great Britain, any disabled man, if he can show that the minimum pension with children's allowances, together with his average earnings, are less than his pre-war earnings, he may be granted, in lieu of pension, an amount which together with the average earnings of which he is judged capable, shall not exceed his pre-war earnings up to a maximum of fifty shillings a week, plus one-half of any pre-war earnings between fifty and one hundred shillings a week.

The alternative pension scheme is said to work well and from the fact that few claims have been made under its provision, it can be fairly argued that the system of awarding pension in Great Britain is working out satisfactorily, as far as the pensioner is concerned. It would be interesting to know the relation of the

*"Pensions," by Llewellyn Jones Llewellyn, M.D., and Bassett Jones, M.D. Toronto, The Macmillan Company of Canada, Ltd., price, postpaid, $6.00 (by subscription), or $5.00 cash.

Canadian pensioner's pre-war earnings to his post-war income plus his pension. A careful investigation on economic lines would be of great value in establishing the soundness of our pension system.

Though deprecating any suggestions of meanness, the authors wisely point out that in those cases falling short of total disablement, a pension, however well deserved, should not be of such an amount as to take away all incentive to work This suggests the desirability of recognizing a difference between the total disability such as that due to the loss of sight, in which the pensioner is able to learn many trades, and of a bed-ridden patient, such as a paralytic, who is utterly unable to follow any vocation whatever. In all justice to the latter it would appear that the total disability pension should be higher than the ordinary, plus, of course, the additional attendance allowance. In determining the amount of pension, it is well to bear in mind the suggestion of the Select Committee, that the present high prices of goods be not made the basis for fixing rates of permanent pensions, many of which will be payable for many years after prices have resumed their normal level.

In drafting a pension system, it is imperative that the authorities seek to evolve a system at once constructive, definite and final, based on the accumulative experience of history. The system, while generous in its provisions for the disabled soldier, must be discriminating and just to both the soldier and the state. Pensions are not to be regarded as a reward for patriotic service, but just compensation for injuries received. The eminent danger of all pensions systems is the extension of their provisions beyond the point contemplated by law, to extend the military pension, for instance, in the case of old men to a virtual old age pension scheme, to confuse a disability due to service, with the natural process of approaching age. The greatest danger of all is the intrusion of politics, resulting in a "piece meal instalment policy, gradually assuming shape through an ill-considered succession of progressive blanket bill enactments."

After such an upheaval, as war creates, there is apt to come a sickly sentimentality. That the soldier has a duty to the state as well as the state to the soldier, is forgotten. How unfortunate for the soldier, if the sentimentalist becomes his champion. "Ill-disciplined and irresponsible, with a fine disregard of public morale or purse, it is they only, they claim, who have the soldiers' welfare at heart." To quote an author commenting on the United States pension system—"Those engaged in the war are uniformly referred to as veterans, battle-scarred, are invariably deserving and worthy men who enlisted at the call of duty with no thought of pension. They were patriots then, they are patriots now, and so forth. They are described as 'old and infirm,' 'some blind,' 'some crippled,' 'some bed-ridden,' 'most of them destitute.' To none of those who themselves personally took part in the struggle, do these statements commend themselves. They are simply absurd in their exaggerations." The danger of extending the principles beyond the intention of the law besets us now, how much more in the future, as the soldier, now young, becomes old or disabled, not from causes attributable to military service.

The authors point out the desirability of determining a time limit in the case of diseases arising after discharge. What is more likely than that ten, twenty or

thirty years from to-day when the body energies of the discharged soldier are on the wane, the tendency will be to hark back to the hardships endured on the campaign, and to demand that the state assume responsibility. Unless such a time limit is set, the state will be evolving gradually a system which will grant pensions for senile decay. In many cases of men who should never have been enlisted, the state must assume responsibility, but it is only fair that when a man claims his health has been undermined by service, some evidence should be required that this is the case, that the conditions under which he has served have been such as to justify the presumption. It should not be assumed to be so, merely because good evidence cannot be produced to the contrary. In cases of real doubt, the benefit should be given to the man.

Many valuable suggestions are made to the expert appraiser in examining of pensioners and for the detecting of malingering or the exaggerating of symptoms. He is warned to approach all cases with an unbiased and impartial mind. He must know what to observe. Inasmuch as the soldier's disability or infirmity constitutes the basis of a claim for pension, "the personal interest cannot be overlooked. False statements as to age or disabilities concealed for patriotic reasons may be condoned," "but not so a subsequent attempt to saddle the state with the total responsibility for a pre-existent lesion with all its evil potentialities."

By Royal Pension Warrant, 1917, a schedule of disabilities was issued in Great Britain, illogical and in many ways defective. It is based on anatomical rather than functional losses. It provides for a permanent pension which may be increased, but not decreased, an obviously one-sided arrangement. The true underlying principle of evaluation is a physiological one. Its determination depends upon the loss of functional capacities. Anatomical destruction does not entitle a soldier to pension unless his earning capacity in the general labor market is reduced. In appraising multiple disabilities the damage as a whole must be considered. It is obvious that the final appraisal cannot be arrived at by simple addition.

Evaluation is made with no reference to the soldier's former occupation. It is objected that this is unfair, that under the Workmen's Compensation Act the former occupation is taken into consideration. Why this difference? The explanation is that the pensions are more than compensation given to make good reductions of earning powers. They are granted for damage to the body. They are given alike to those requiring assistance and those who do not. If a pension be increased because of the pensioner's former occupation, it will logically be reduced, if the damage does not impair his earning capacity, thus the lawyer or teacher who has lost his left hand might receive no pension. It would savour of class legislation.

Comparison of the British schedule, French "Bareme" and Continental systems, with the author's own evaluation for disabilities, occupies a considerable portion of the work. It is impossible in the space of review to deal in detail with this large subject. The work is carefully written, is interesting reading and is a commendable addition to our knowledge of pensions.

Gathering Cocoa Pods
Cocoa Pods
Packing Cocoa Beans
G.90

PRACTICAL DIETETICS

COCOA, ITS HISTORY AND MANUFACTURE

Experts are agreed that broths be classed among beverages, although they contain much solid matter, which, however, is in a state of comminution and subjected to a more or less prolonged ebullition, and in some cases to fermentation.

From Theobroma Cacao, the plant that produces cacao beans, one of the most highly nutritious broths is made. Modern historians and all well disciplined sophomores vouch for the accuracy of the statement that Columbus was the first white man to learn of Cacao as a highly prized article of food, and also of its use as money in prehistoric Mexico, and that the illustrious Genoese had obtained from a Cacique of Yucatan specimens of this precious food and money equivalent, while he was sailing along the coast of Honduras, on his fourth and last voyage, in 1502.

They are also positive about the time of the interview in 1520 between the adventurer, Cortez, and the noble and good Aztec Emperor, Montezuma, who offered the Spaniard a drink of chocolate in a golden vessel, which the ungrateful kleptomaniacal guest did probably purloin.

Students of botany speak of the Cacao tree, of the natural order Sterculaceæ, as a native of south-eastern Mexico, below the twentieth degree of latitude. They say that the tree best thrives in tropical regions within the fifteen degrees of north and south latitudes; that the cultivated plant grows from sea level to two thousand feet above in the alluvial soil of the valleys; that it is seldom over eighteen feet high, and that the highest are the wild trees; that the beautiful, light green, glossy leaves average ten inches in length, three inches and a half in mean breadth, and are elliptic-oblong and acuminate; growing generally at the ends of branches, but occasionally directly from the trunk; that the flowers, which are small, bloom in clusters on the larger branches and on the trunk itself; that each cluster yields a single fruit; that the ripe fruit from a trunk cluster looks as if it had been artificially pinned to the spot; that the matured fruit or pod is elliptical-ovoid in form, from seven to nine inches in length, and from three to four inches in mean diameter, has a thick, tough, purplish yellow rind with ten longitudinal ribs; that this pod is divided into five long cells, each containing eight or ten beans embedded in a soft pinkish acid pulp; that the beans are irregularly ovoid, averaging one inch in length, five-eighths of an inch in breadth, and three-eighths of an inch in thickness; that the coquettish tree plays the amorous prank of almost always having buds, flowers, and pods in sight, so that ripe fruit may be gathered at any time, but the regular harvests are in June and December, each tree yielding about twenty pounds of beans annually; and that the nubile age of the tree is five years and its prolific period is forty years, when comes the menopause. Such is the nature of the plant which has received from the illustrious Linnæus the name of "*Theobroma Cacao.*"

The manufacturers assert with confidence that the best cacao is produced in Venezuela, principally near Puerto Cabello and La Guayra, and the merchants say that the preparation of cacao beans for the market is not the least part performed by the planters, for, unless made with proper care, the whole crop may be lost. The process is briefly as follows: The harvesters heap up the pods on the

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We misname the berries cocoa, because the Jicaras or native cups in which the cacao was drank by the Mexicans, were made of the small end of the cocoanut.

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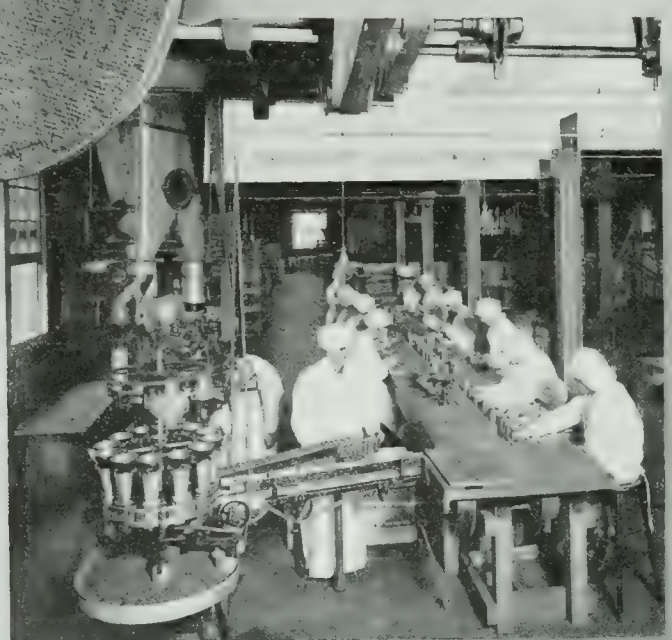

Automatic Cocoa Filler

C.93

ground and leave them to wilt, and on the next day cut them open, set free the beans and carry them away in baskets so constructed as to allow the juice of some of the still adherent acid pulp to drain off; after thorough draining the beans are placed in "sweating boxes" or buried and covered with clay for fermentation during forty-eight hours, this being called the claying of the beans, which are then taken out and dried in the sun, when they assume a warm reddish hue, which is characteristic of superior qualities, ready to be packed for exportation. The *Theobroma Cacao* is now cultivated in India, Ceylon, Southern China, the Philippines, and other tropical regions.

It happened long, long ago that an epicurean commanding officer of a distant military post had some doubts about the genuineness of the Gods' food served at his regular morning meal and, desiring information on the chemistry of cacao, sought enlightenment from the post surgeon, who asked for time to confer with the commissary of subsistence, who suggested that he write for scientific advice to the Medical Director of the Department, who referred the communication to the Medical Purveyor, who sent it to a chocolate merchant, who appealed to a manufacturer, who consulted his apothecary, who entered into a lengthy correspondence with the most eminent chemists of the terrestrial globe, who, after twelve months' delay in elaborate investigation, obtained results of the most diverse character because some of them had analyzed beans which they had extracted from the fresh pods before the wilting process, others had selected the fermented but not dried beans, and the majority had taken their specimens from cured and roasted beans. While in this multitude of experimenters, only one was found to have used the cacao beans as cured for exportation. In his perplexity, the industrious, enterprising and inquiring surgeon closed his final report with the query—Who shall decide when such high and mighty authorities disagree? As he had annexed to the report scores of analytical tables, among which was one from the French chemist, Payen, to whom the *Bon Dieu* had given the brilliant idea of subjecting to analysis only the cured and untoasted beans, the Commander, casting a glance at this last table, said he thought it always safe to decide in favor of those whom the Gods love, and so decided that the Gallic favorite of Turey had overcome in astuteness all his wayward competitors; but alas, the information had come too late for the warrior's comfort, as he had already given up bad chocolate for good coffee, to which he sometimes added the Commissariat's *spiritus frumenti* in sufficient quantity, for lack of *fine Champagne eau-de-vie*. The surgeon also accepted the Frenchman's analysis of *Theobroma Cacao* beans unroasted, which is as follows:

Fat (cacao butter)	52.00
Nitrogenous compounds	20.00
Starch	10.00
Cellulose	2.00
Theobromin	2.00
Saline substances	4.00
Water	10.00
Cacao red	(traces)
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The learned chemists, however, agreed that the large percentage of fat in cacao greatly increased its nutritious properties, and were also of the same mind as to the component elements of the highly nitrogenized principle *theobromin*, whose formula is $C_7H_8N_4O_2$, and whose chemical name is dimethylxanthin, differing from *caffein* by having one atom less of carbon and two less of hydrogen; *caffein* being trimethylxanthin.

Unlike tea and coffee, chocolate and cocoa have a high food value, as shown by the following analysis:

	Protein	Fat	Carbo-hydrates	Mineral Matter	Water	Calories per lb.
Chocolate	12.5%	47.1%	26.8%	3.3%	10.3%	2720
Cocoa	21.6%	28.9%	37.7%	7.2%	4.6%	2320

Cocoa, being less rich in fat than chocolate, is not likely to cause indigestion and has real body-building and sustaining powers. The use of cocoa often makes milk acceptable when it would otherwise be refused. Hence this beverage is good in convalescence.

When the beans arrive at the factory, they are first cleaned and sorted as to size. Then comes the roasting in great revolving ovens, similar to those used for roasting coffee. This roasting process helps loosen the shell from the inner kernel. The next step is to remove the shell from the kernel, which is done in a sort of winnowing machine, where an air blast carries off the shell. At the same time, the kernel is broken up or cracked, and we have what is commonly known as cocoa nibs. These cocoa nibs are then conveyed to the hoppers of the cocoa mills, where they are ground into chocolate liquor, through several groups of heavy millstones. When the cocoa nibs are put into the hoppers of the mills, they are hard and brittle, but they contain so much butter or natural fat that, when they are ground between the millstones, they are changed from solid to liquid form, due to pressure and heat caused by friction. The grinding process is continued until the liquid chocolate is as fine and smooth as desired. The liquid chocolate which comes from the mills solidifies when cold, and is the bitter chocolate or the chocolate liquor.

To make sweet chocolate, which is the regular grade of eating chocolate so popular with the soldiers, chocolate liquor, sugar, cocoa butter and vanilla flavour are thoroughly mixed together in huge melanguers or dough mixers into a chocolate paste. This paste is then put into molds or tin pans, the shape of the desired cake. These are then placed on shaking tables, where the vibration causes the dough to settle evenly in the pans. When this dough has been properly cooled, the cakes can be readily taken from the molds, and we have the commercial product known as sweet chocolate.

To make cocoa powder the chocolate liquor is passed through heavy hydraulic presses, where the cocoa butter or fat is extracted by means of pressure. When the resultant cocoa cake is finely ground and sifted, we have what is known to the consumer as cocoa or cocoa powder.

As for the food value of chocolate, the following table, prepared by Dr. Johnson, shows the heat-giving power in comparison with other nourishing foods:

1 Kilo Lean Beef	1214	calories
1 Kilo Fat Beef	3047	calories
1 Kilo Hen's Eggs	1678	calories
1 Kilo Peas	2710	calories
1 Kilo White Bread	2528	calories
1 Kilo Cocoa Mass	5967	calories
1 Kilo Chocolate	4763	calories
1 Kilo Cocoa Powder	4167	calories

The remarkable sustaining power of chocolate and its preparations is fully recognized by explorers, athletes, mountain climbers, soldiers, sailors and many others engaged in work or pastimes which require great physical endurance. It is also a fact that men who eat chocolate and candy have little desire for liquor.

Canadian manufacturers of prepared cocoa are now entering the European field and, we are told, meeting with wonderful success. It looks, therefore, that instead of Canadians looking to Europe for this healthful beverage, we have at home, one that fully equals the overseas product, and which in some respects is even better.

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Book Review

CEREBRO-SPINAL FEVER—FOSTER & GASKELL*

An instructive text which is the outcome of facts carefully observed in close association with clinical material is to be found in Foster and Gaskell's excellent monograph on Cerebro-Spinal Fever.

Unique facilities were afforded the authors in compiling this treatise during the epidemic of Cerebro-Spinal Fever which menaced the troops in England during the year 1915.

For long previous to the outbreak of the present war, little was seen of this dread disease, with the result that the literature obtainable on the subject was far from exhaustive.

In the present work the history, symptoms, diagnosis, treatment, prognosis, pathology and bacteriology of the disease have been thoroughly discussed and correlated, making the book well worthy of the attention of the profession interested in the subject.

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We take great pleasure in announcing that, in response to a great many enquiries for photographs of the eminent physicians, appearing biographically in the different issues of the Canadian Medical Quarterly, we are now able to supply them to any of our subscribers upon request.

These photographs are 7 x 5½ inches in size, and very suitable for framing. In time they will form a very fine collection, quite worth while for any doctor to own. The series so far comprises the following: Dr. Christopher Widmer, 1780-1858; Dr. William Rawlings, Beaumont, 1803-1875; Sir William Osler; Dr. Richard Andrews Reeve, 1842-1919.

Each issue of the Quarterly will contain a portrait and biographical sketch of an eminent Canadian physician, and enquiries for portraits of these men should be addressed to The Canadian Medical Quarterly, 70 Bond St., Toronto.

*"*Cerebro-Spinal Fever,*" by Michael Foster, M.A., M.D., R.A.M.C., and J. F. Gaskell, M.A., M.D., R.A.M.C., 222 pages, 11 plates and 8 other illustrations, 1916, Toronto, The Macmillan Company of Canada, Ltd., price postpaid, $3.50 net.*

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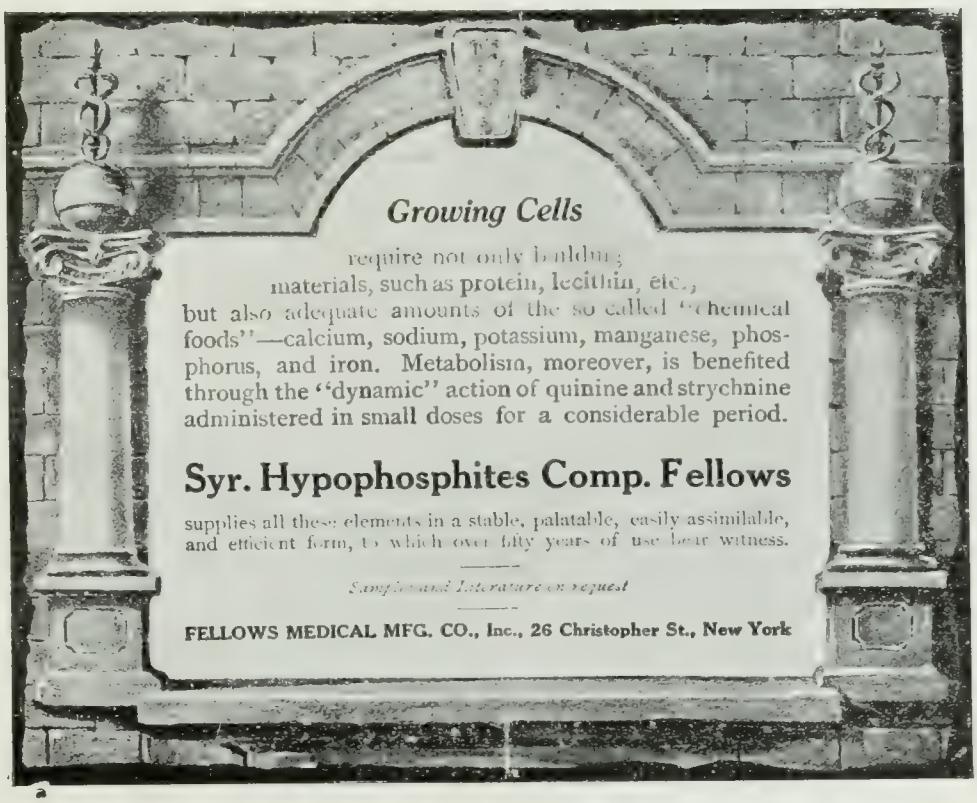
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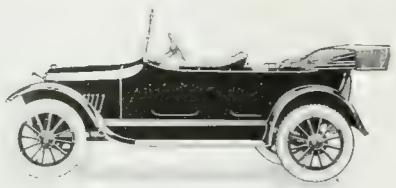

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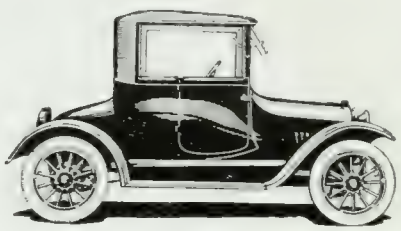

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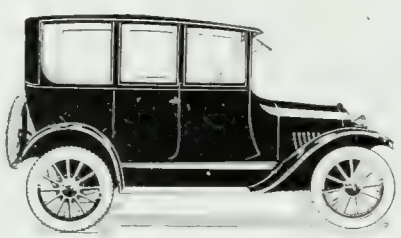

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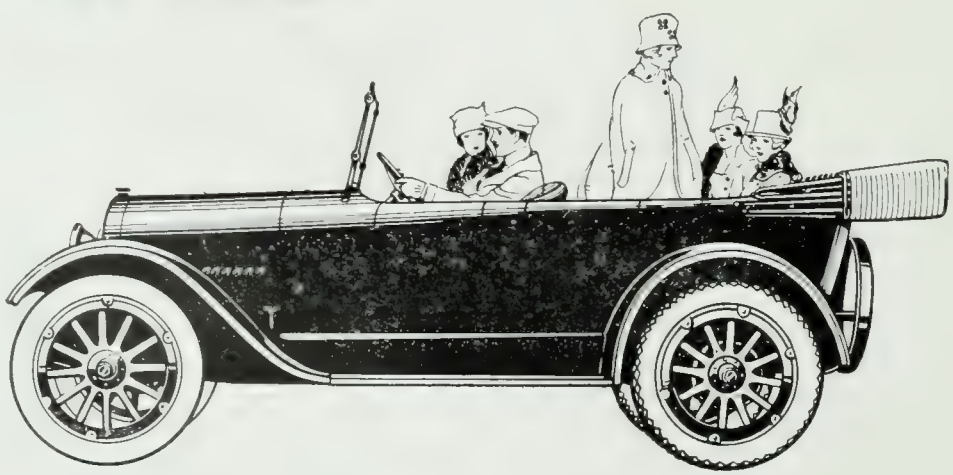

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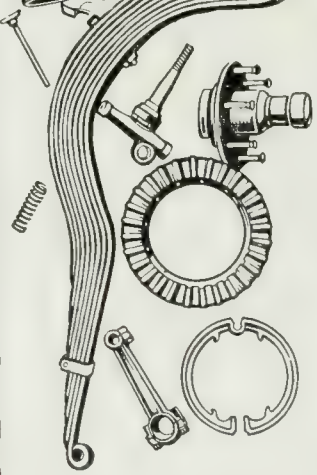

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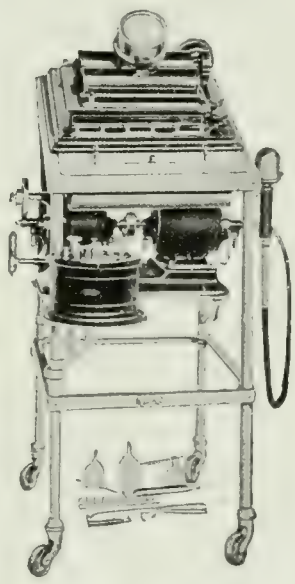

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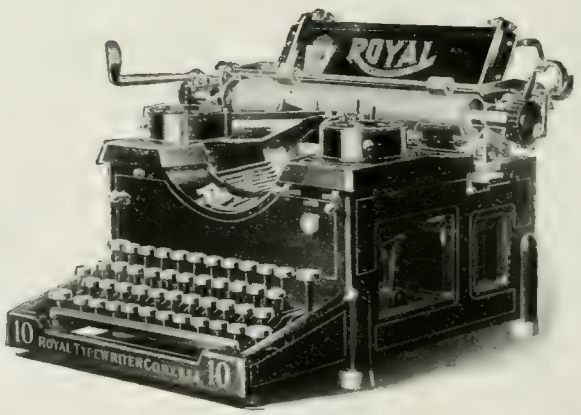

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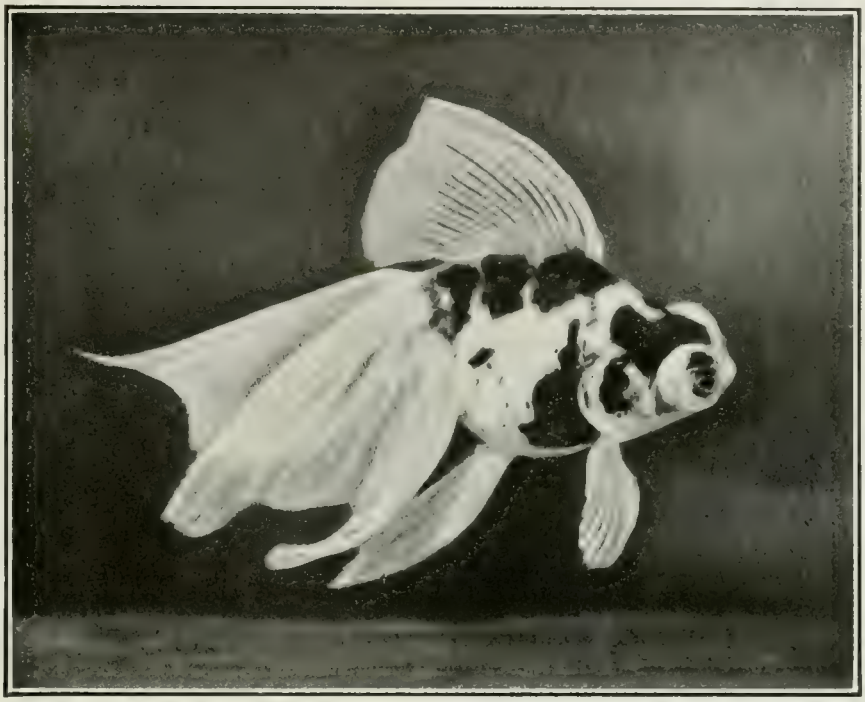

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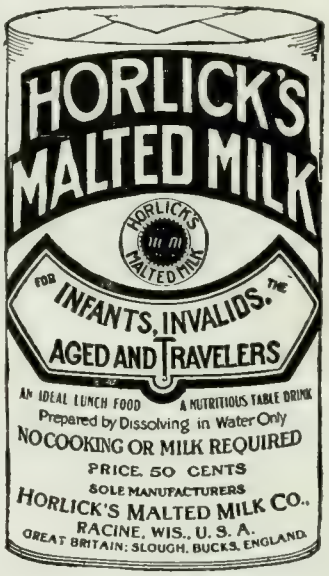

HOW *successfully* Horlick's has met the requirements of the physician and needs of the patient is shown by the universal accord with which it is prescribed.

Sample and printed matter prepaid to the profession

Horlick's Malted Milk Co.

Racine, Wis. Slough, Bucks, Eng.
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The Standard Oil Co. (New Jersey) is in a position to select raw materials of the best quality obtainable in any parts of the world; and with their excellent manufacturing facilities and expert chemists they offer in NUJOL a product for use in the treatment of constipation of the finest quality manufactured in any country up to date.

In witness of this fact we will be pleased to send a sample of NUJOL to any physician who will request it of Charles Gyde & Son, Box 875, Montreal, Quebec, Canadian Selling Agents.

F. H. Bedford Jr.

MGR NUJOL DEPARTMENT

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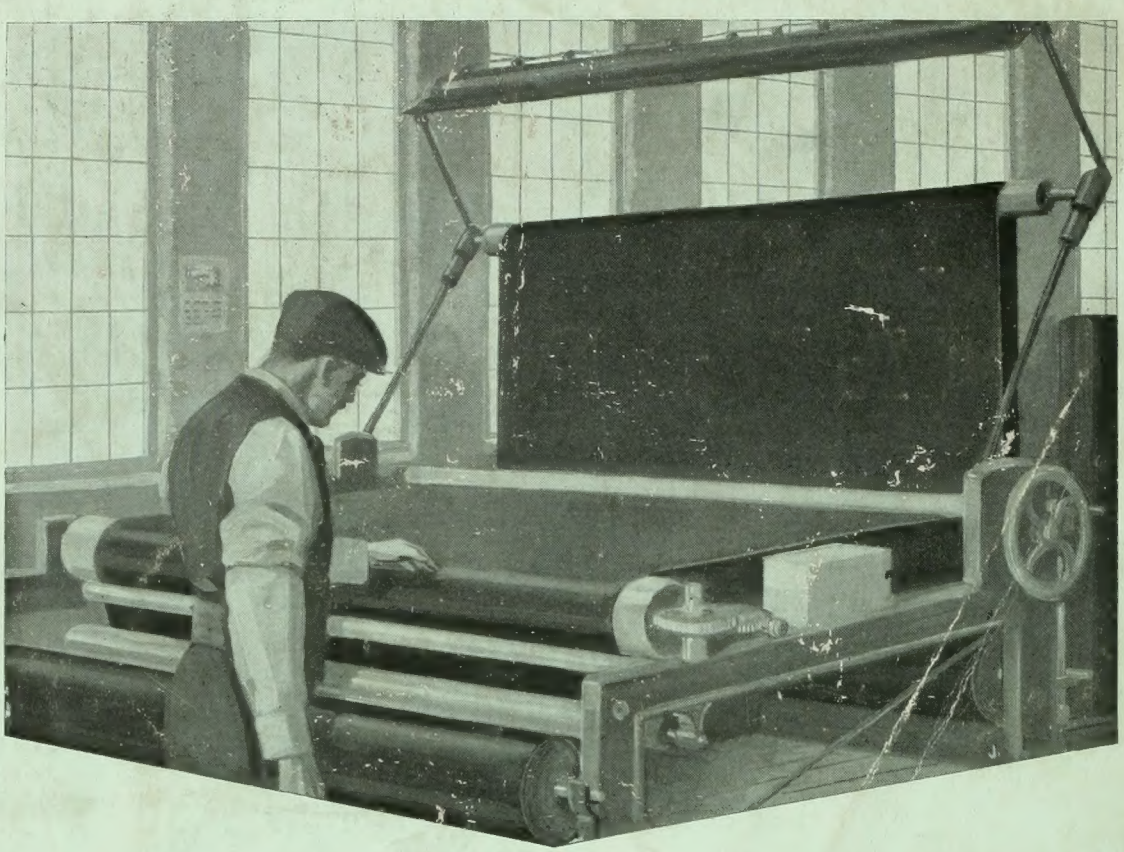

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